Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOLUME 5.] NEW YORK JULY 20, 1850. [NUMBER 44.

THE
Scientific American,
CIRCULATION 14,000.
PUBLISHED WEEKLY.
At 128 Fulton Street, New York, (Sun Building,) and 13 Court Street, Boston, Mass.

BY MUNN & COMPANY.

The Principal Office being at New York.

A. T. Hotchkiss Boston.
Geo. Dexter & Bro., New York City.
Stokes & Bro., Philadelphia.
R. Morris & Co., Southern.

Responsible Agents may also be found in all the principal cities and towns in the United States.

TERMS--$2 a year--$1 in advance, and the remainder in 6 months.

Rail Road News.

Crossing the Atlantic in Seven Days.

A petition has been presented to the Legislature of the State of Maine for the survey of a new line of Railroad in the direction of St. John's, New Brunswick, with a view of its continuation to Halifax, or some good harbor on the coast of Nova Scotia. The object is to have the railway connected with the interior lines in our country, to carry passengers to the said port on Nova Scotia, from which swift steamers are to carry them to Galway, Ireland, thence by railroad to Dublin, and from Dublin across to Wales to the Holyhead railroad. If this scheme were carried out, there can be no question of the practicability of going from New York to London in eight days, and perhaps seven. Halifax might yet become the entrepot of mail intercourse between the east of our continent and the west of Europe. We have no wish to see this result, but by good management and prudent investment of wealth on the part of Great Britain, the Provinces of Nova Scotia and New Brunswick might yet become as famous as either of the States of New York or Pennsylvania.

Railways.

The entire amount of capital invested in railway communications in all the countries of the world, is estimated at three hundred and sixty-eight millions and a half. Upwards of 18,900 miles of railway have been constructed. The capaital to be invested in 7,800 miles in progress, will amount to nearly $147,000,000.

Halifax and Quebec Railway.

The Acadian Recorder states that Lord John Russel has consented that the guarantee of the British Government shall be given for a loan of £2,000,000, at 4 per cent., to construct the Halifax and Qubec Railway.

Long Train.

The Hudson river railroad one day last week brought down a train of twenty three large cars, having 1,750 passengers. The train was half a mile in length—the heaviest train, probably, ever drawn in this country by a single locomotive.

There are now in process of construction nine railroads in the State of Indiana the aggregate length ef which is 432 miles.

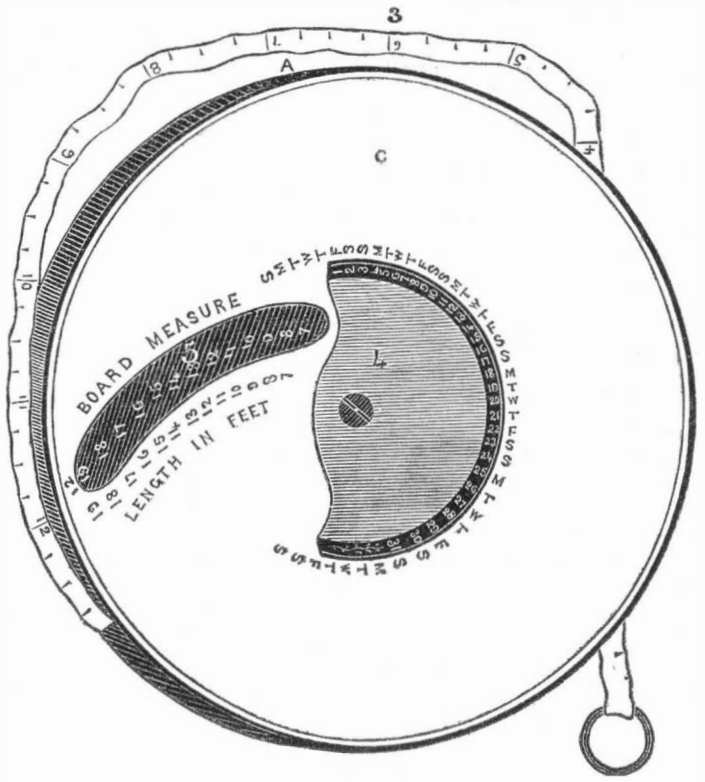
Bright Nights.

So bright have the nights been in the North, a Scotch paper says, that during a fortnight small newspaper print could be read in the open air in Caithness, after a quarter past eleven o'clock, P. M. At Wick, as the town clock struck twelve at night, a newspaper was read by the light of the sky.

Saltpetre.

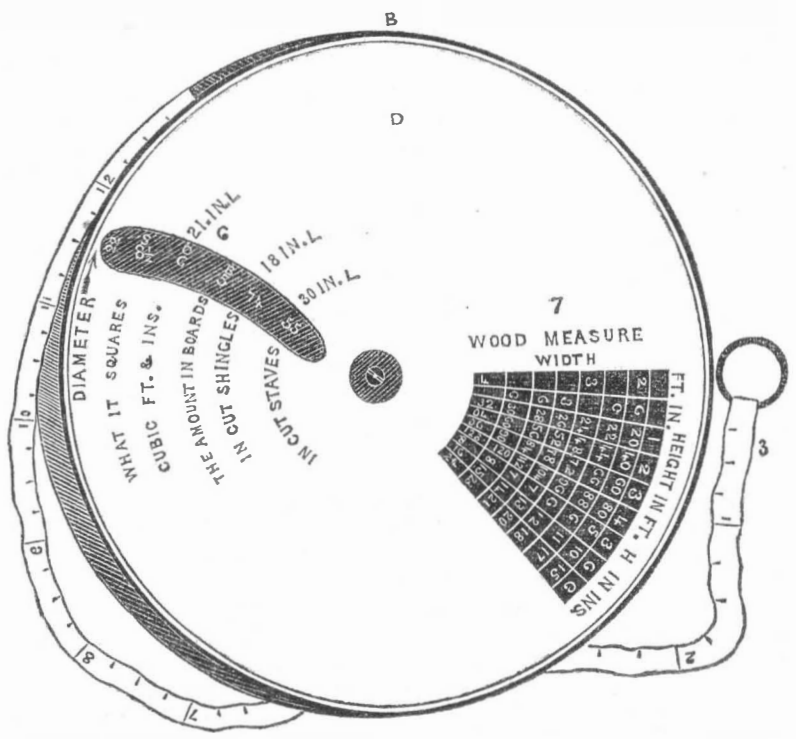
The insurance companies of New York have come to a conclusion that they will not insure any building, or goods in any building, which contains saltpetre. The Councils also talk of putting it on the same footing as gunpowder, limiting the amount allowed in any place.

ROTARY BOARD AND LOG RULE, AND MEASURE.



This improved instrument is the invention of Mr. Charles B. Hutchinson, of Waterloo, Seneca Co., N. Y., and secured to him by patent on the 4th of last month, (June.) The instrument is for measuring lumber, such as logs and boards; showing the number of feet they contain, the number of feet of boards, the number of shingles, or staves that can be cut from a log of a given size; and it contains a table for wood measure and one for the day of the month.

The accompanying engravings represent the two sides of the apparatus, A being the one side and B the other; 3 is the tape, as drawnwood. The apparatus is made of two circu



ar plates of brass, held together by an outer rim, through which is made to pass the tape into and from the wheel which is enclosed inside. The tape is marked out into 48 inches.

OPERATION—To measure boards, take the instrument in the left hand and draw out the tape the width of the board, and so far that the figure indicating its width shall be opposite the opening in the plate C, fig. A. Then from the wheel, which is inside; 4 is a plate distinct from the case, and is moveable on it and numbered from 1 to 31, for the days of the month. On the plate C the initial letters of the days of the week are marked, which are made to correspond with the plate 4, which is moved for that purpose, like the revolving pencil heads, to indicate, with the figures, the days of the month; 5, on fig. A, is an inner plate which revolves, as the tape is drawn out on its axis; 6, on fig. B, is an inner plate revolving like 5; 7, fig. B, is a table showing the number of feet in a given quantity of wood. The apparatus is made of two circu

opposite the figures, on the plate C, at the side of the opening therein, (which figures indicate the length of the board from 7 to 19 feet) will be seen on the inner plate, 5, on the same circular line, the number of feet contained in the board. If the board be twelve inches wide and nineteen feet long, the inner plate, 5, shows that it contains 19 feet. If 18 feet long, then 18 feet is shown. If the board is 16 inches wide and the tape is drawn out 16 inches, the inner plate will show that in a board of that width and 19 feet long, 25 feet are contained in it—and so on. As the tape is drawn out 12, 15, 20, or any number of inches, a corresponding number is shown on the outer edge of the inner plate 5.

To measure logs, and first to show what a log of a certain diameter will square; second, its cubical contents; third, the number of feet of boards that can be cut from the log; fourth, the number of cut shingle; fifth, the number of cut staves. Draw out the tape the diameter of the log, and so far that the figure on the tape corresponding with its diameter, shall be opposite the opening of the plate in figure B. Then will be seen on the inner plate 6, through said opening at the side thereof, and on the circular line with the words on the plate D, fig. B, "what it squares," (the log), and opposite the words on said plate "cubic feet and inches," (its cubical contents,) opposite the words "The amount of boards," "In cut shingles," "In cut staves," will be found the feet of boards, number of shingles, and cut staves that the log will contain. In this measurement it is assumed that the log for the square, cubic, and boards, is one foot long, for the shingles 18 inches, for the staves 30 inches long—for logs of greater length multiplication must be made accordingly. For example, in figure B, if the tape be drawn out 12 inches, a corresponding figure will be found on the outer edge of the inner plate 6, under which will be found, on the same circular line, with the proper words; first, 8½, the number of inches the log will square; 6 (measuring six-twelfths of a cubic foot) the amount of cubic measure contained; 5 the number of feet of boards said log will make; 74 the number of shingles. and 55 the number of staves which can be cut from the log. The log for the square, cubic, and boards to be 12 inches long, for the shingles 18, and for the staves 30 inches, the shingles to be ⅜ of an inch thick at the butt, and the staves ⅝ of an inch thick. A spring is contained inside to draw back the tape in the usual way. This instrument has been highly praised by those who have used it. It is now in the hands of Mr. Wm. Knox, of Waterloo, N. Y., to whom all communications should be addressed (post-paid) who will promptly pay attention to the same. The making and selling of such instruments, we believe, will be a good paying business.

Farmers, Make your own Candles.

Take 12 pounds of alum for every 10 pounds of tallow, dissolve it in water before the tallow is put in, and then melt the tallow in the alum water, with frequent stirring, and it will clarify and harden the tallow, so as to make a most beautiful article, for either winter or summer use, almost as good as sperm.

If the wick be dipped in spirits of turpentine, the candles will reflect a much more brilliant light.

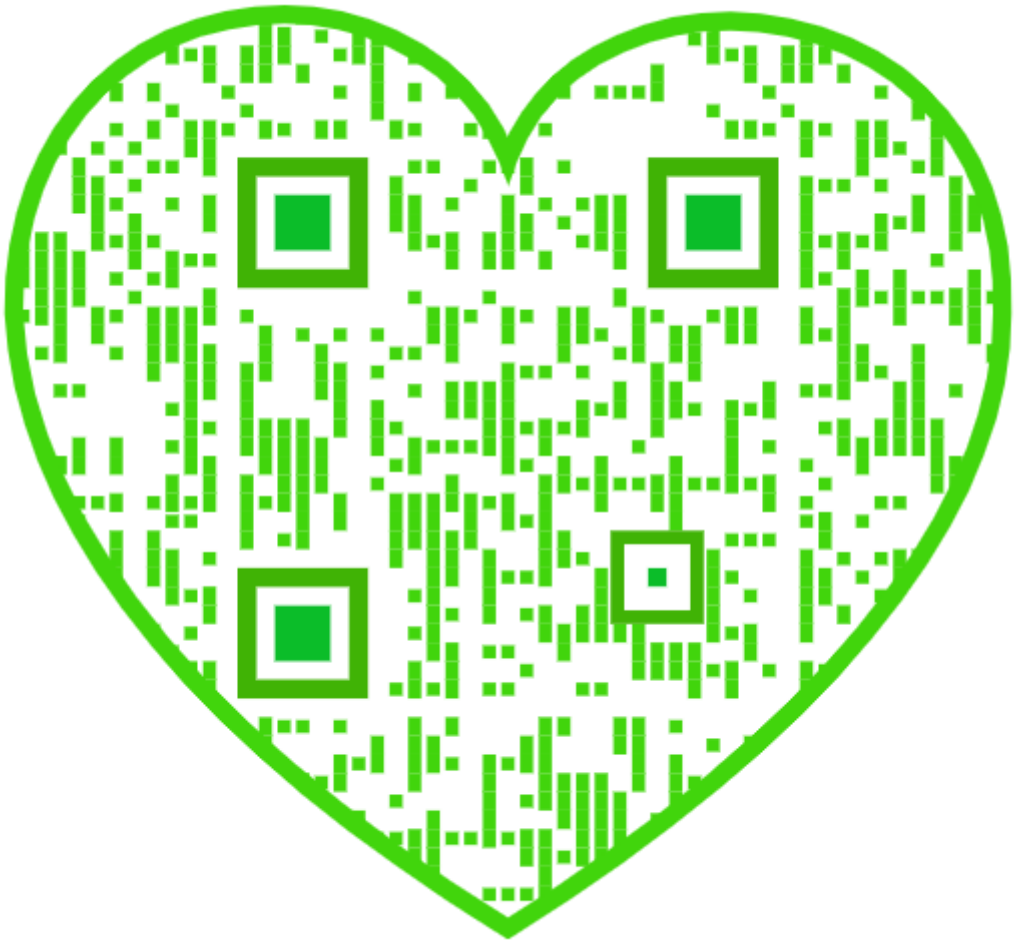
[The above is from the American Farmer, and appears to be a good receipt.

To Make Pearls.

The Encylopedia Britannia gives the following as the method of producing pearls:—"The shell is opened with great care, to avoid injuring the animal, and a small portion of the external surface of the shell is scraped off. In its place is inserted a spherical piece of mother of pearl, about the size of a small shot or grain. This serves as a nucleus, on which is deposited the pearly fluid, and which in time forms a pearl."

Mr. Willet, of Leadyard, N. Y., has sheared from two merino bucks 29 pounds of wool. The sheep are three years old, and were brought from Vermont a couple of years ago.

© 1850 SCIENTIFIC AMERICAN, INC



Miscellaneous.

A Scene Altogether American.

The National Intelligencer, commenting upon the sad event of President Tayloy's death, alludes to an incident of the day, which probably made less impression than some others on American spectators, but was precisely that which is most calculated to attract the notice of foreigners.

The death of the President being announced, a citizen, plainly attired, enters among the assembled Representatives of the nation, walks up to the Clerk's desk, takes an oath on the Bible to support the Constitution of the United States, and, by this brief ceremony, he becomes, in an instant of time, invested with the command of the whole military force of a mighty empire, with the execution of its laws and the administration of its power. No one objects or dreams of objection ; the act is acquiesced in as a thing of course, and with the submission that would be rendered to a law of nature. The sceptre of the people passes into his hands as quietly and as quickly as a power of attorney could be acknowledged before a justice of the peace. And yet, though the individual attracted attention, the thing itself was hardly thought of, in connection with the consequences. In some countries such a transfer of power would have cost streams of blood, and shaken the government to its very foundations. And why is it not so here ? Because ours is a government of equal rights, and a government of laws, and because our people are a law abiding and a law-keeping people ; because they know and feel that their own laws are the restraints which they themselves have placed on their own passions, and that it is only by obeying these laws that their equal rights can be maintained. May such ever be their spirit ! If so, we may well say of the Republic, not "*esto* perpetua," but "*est* perpetua."

Death of an Inventor.

Adam Ramage, the well known inventor of the "Ramage Printing Press," died at his residence in Lombard street, Philadelphia, on Tuesday the 9th inst. His last illness was short, although from his advanced age—nearly 80 years—he had suffered from general debility, rheumatism, and other complaints, for a number of years. As the inventor of the "Ramage Press," Mr. Ramage is known all over the United States. The business of press making he has continued at his factory, in Library street, up to the time of his death, and has supplied most of the presses of that character that have been used in the United States for a number of years. He was a native of Edinburgh, Scotland, and came out to America in the same vessel with Laurie Todd (Grant Thorburn), about half a century ago. He was a cabinet maker by trade and possessed great mechanical genius, a faculty peculiarly pre-eminent in his countrymen—as the Napier Press, and Stereotyping in the art sf printing are strong evidences. The Ramage press was a screw motion to operate the platten. It is now but little used. Adam Ramage was a man of good sense, amiable and benevolent, and a great lover of Burn's poetry.

Monster Dividend.

The Pacific Mail Steamship Company, of which Messrs. Howland & Aspinwall are the representatives, have declared a dividend of fifty per cent., their first dividend. This Company started, we believe, with a capital not exceeeing six hundred thousand dollars. It has since purchased the steamship Unicorn, Tennessee, Cherokee, and Philadelphia, for which there must have been paid all of seven hundred thousand dollars. This fact, considered in connexion with the dividend above mentioned, will afford some idea of the profits of the business.

Tall Work.

Mr. John Walter, of Smithsburg, Washington county, Md., on a wager of $10, cut on Saturday, 6 acres and 18 perches of wheat, making 203 dozens sheaves. The Hagerstown Herald, says this is considered the best day's work ever performed in that county.

An English Legal Decision.

A Miss Bateman, not long since, made her will, in Newington, England, leaving a very large property to her friends and poor distant relatives. In writing out the will it filled three pages of a sheet of paper, and so she naturally turned over to the fourth page and made her signature. This, it was contended, was not signed at the end of the will, and therefore, the will was without a signature! The Court sustained the view of the case, and the large property of Miss B. went to her near relatives. A blind girl, a friend of Miss B., lost five thousand dollars by this mean business ; a young minister lost eight thousand dollars. And even her faithful servants, to whom she gave one thousand dollars each, had to go off empty-handed. In fact, a large property of $150,000 went to enrich two millionaires, instead of being divided among the poor, as the lady had intended.

This decision is proof fact of the old say ing,

> The judge, like a great *jackdaw*,
> Lays down that which is *Law*.
> And although you do not get justice.
> You are sure to get plenty of law.

Mr. Paine Literally Blown Up.

Mr. Paine, has had another attempt made upon his life. Somebody has been trying to blow him up. The Boston Transcipt says :—Mr. Paine being in our office a few days since, we noticed that his face was badly scarred with blotches, as if it had been excoriated in various places. A friend inquired the cause of the appearance, when Mr. Paine stated that a small package of cigars was sent to him in Worcester, a few days since, with an accompanying note stating that they were sent to him as a specimen for trial. Mr. Paine lighted one of them, but had not smoked it longer than a minute when it exploded, scattering sulphur and fulminating powder in his face. The wretch, who could be guilty of such an outrage, would poison grandmother for the old silver on her spectacles.

Experiments with Galvanized Wire and Hemp Ropes.

Experiments have been tried in Woolwich Dockyard, England, to ascertain the comparative strength of wire and hemp ropes. A wire rope, 3 inches round, and a hemp rope of 3 strands, hawser laid, common make, 7 inches round, were spliced together, and placed in the testing machine, and on the hydraulic power being applied the hemp rope broke in the middle on the strain reaching 11¾ tons, the wire rope remaining apparently as strong as when the experiment commenced. A wire rope 3½ inches round, was then spliced with an 8 inch hemp shroud rope, and on the power being applied the hemp rope broke in the middle with a strain of 10½ tons, the wire rope continuing apparently uninjured.

Society of Public Health.

A society has been formed in our country for the purpose of arousing the attention of the public to the necessity of a "health reform," the members of it being impressed with the belief that disease and premature death are in most cases the result of ignorance of the laws of health. The ultimate objects of this Society are the abolition of all unhealthy nuisances, and to secure to our entire population, cleanliness, pure air, proper food, houses, clothing, and to elevate the standard of medical practice, to act for the preservation of health, rather than the curing of diseases. These are noble objects truly. Surely there is no man who would not subscribe to them. This society has sent round circulars which can be supplied by the secretary, F. L. Nichols, M. D., No. 87 22nd st., New York. Those who write to him must mind and (p. p.) their letters.

Ohio State Board of Agriculture.

The first Annual Fair of Ohio State Board of Agriculture will be held in the city of Cincinnati, on the 11th to the 14th of next September. The Executive Committee consists of Darius Lapham, Cincinnati, I. G. Gest, of Xenia, J. M. Bateman, of Columbus. We hope the citizens of Ohio will make this Fair one of the superlative degree—this is expected of Ohio.

Manufactures in Providence, R. I.

As the city of Providence has, within a few years, taken very decidedly the start of its ancient compeer, Salem, it is worth while for us (says the salem Gazette) to see what meat it feeds on, that it has grown so great. According to the carefully prepared statistics of a gentleman in Providence, there are in that city four bleaching and calendering establishments, bleaching 18 tons of cotton cloth per day, including printing cloths, and employing 500 hands. There are printed each week 13,000 pieces of cloth, or 390,000 yards, employing 500 hands. There are four cotton mills, of 34,000 spindles, which make 58,000 yards of cloth per week, employing 730 hands. Two woollen mills manufacture 375,000 yards of satinets and jeans, consuming 126,000 pounds of wool annually, employing 120 hands. There are two screw factories that manufacture annually 700 tons of iron, employing 475 hands. Fourteen furnaces, consuming 5,000 tons of pig iron for machinery, turn out 14,000 parlor, cooking and counting-room stoves, and 550 plows—employing 272 hands. There are three steam engine establishments, for building steam-engines, employing 240 hands. One rolling-mill employs 75 hands, makes 30 tons railroad iron and 3 tons of wire per day from pigs and blooms. One edge tool, nut and washer factory, manufactures annually 31,200 dozen plane-irons, 100 tons hinges, 300 tons bolts, 200 tons nuts, 100 tons pick-axes and other forges—95 hands. One factory for manufacturing shoe-ties, corset-lacings and braid —employs 36 hands, and consumes 1,200 lbs. of cotton per week. Four planing-machines plane 10,000,000 feet of lumber annually, make 75,000 boxes for goods, cradles and sofas, and 100,000 sash lights—employ 400 hands. Eight engraving shops, for engraving copper-rolls for printing cloths—80 hands. Three butt-hinge factories employ 30 hands, and manufacture annually 100,000 dozen hinges. There are in this city five brass foundries, and seventeen tin and sheet-iron shops ; 16,000 weavers' reeds are manufactured from steel wire ; 1,200 men are employed in making cotton and woollen machinery ; 500 house-carpenters, and 350 stone and brick masons, here find employment. There are 65 steam-engines in operation. There is paid annually for labor in the manufacture of jewelry over $100,000.

Well done little Rhody.

A Gold Placer on the Arkansas River.

The Van Buren Intelligencer declares that gold has been recently discovered in various places for a distance of about seventy miles along the Arkansas river, beginning at a point about 200 miles above Fort Gibson. It is also found on the Little Arkansas and on Cottonwood creek. It is found in the beds of these streams, and is obtained by washing the sand, as in the Sacramento. A party of men from Washington county, Ark., have been already at work at these placers, but having no machinery, they merely took enough of the gold to test its value. Another party is to start from Cane Hill on the 13th of August, and a party of Cherokees on the 19th ult.

The Siamese Twins Dead.

The Paris Journal des Debats announces the death, in England, of the famous Siamese Twins. The Debats states that according to the London Medical Times, the two brothers died of marasmus. A post mortem examination proved what has been constantly supposed by the faculty, viz., : that the two cavities of the abdomen communicated by means of the hollow ligament which united them, and that the livers of the twins were connected by a membrane bridle about half an inch thick.

Fire-Proof Buildings.

The Sun of last Tuesday had a very able article on Fire-proof Buildings—we hope our City Magistrates will give it some attention. This is a subject which interests every man, woman and child in this and every other city in the Union. Why is it that we have so many fires ? Can there be no efficient remedy devised ?—are questions worthy of deep consideration, for we have a fire in this city every night.

A seam of black lead has been discovered near St. Johns New Brunswick.

The Comet.

Mr. Bond, of the Cambridge University, writes to the Boston Traveller on the 11th, that the comet is now plainly visible to the naked eye, near the bright star Arcturus in the constellation Bootes. It is better seen with a small telescope, or with an opera glass. A tail of five degress long, too faint to be discerned with the naked eye, is visible in large telescopes. Its length is four millions of miles, and daily increasing. The nucleus, of a few hundred miles in diameter, is very dense, apparently a solid body.

About the 20th of this month the comet will pass very near to the place occupied by the earth on the 25th of June its velocity at that point will be one hundred thousand miles an hour.

Its distance from the earth is now forty millions of miles, and from the sun one hundred millions. It passes its Perihelion on the 22d of July.

American Steamships.

The Atlantic made her last voyage from New York to Liverpool in ten days and sixteen hours. This was an excellent passage. The Collins Line bids fair to rival the Cunard. We have seen a great number of comparisons between the Collins and Cunard Steamships, but we have no correct means of comparing the two to give a just opinion. In the course of ten years more, with the just, wholesome and generous rivalry between America and England, the average length of passages between this city and Liverpool will be about 10 days.

Terrible Fire in Philadelphia.

On the evening of Tuesday, the 9th, three hundred and fifty buildings were destroyed, and, alas ! we have to record the loss of thirty lives. The deaths were caused by explosions. The explosions were caused by gunpowder, no doubt. Some have said that there was no gunpowder there, only saltpetre, but this we do not believe. It is our opinion that gunpowder alone was the cause of the explosion.

Large Hammer.

The bark Robert, which arrived in this city on Wednesday last week, from Liverpool, brought a steam hammer weighing about fourteen thousand pounds. It was made by a Mr. Nasmith, of Liverpool, upon the order of Mr. Ames, an extensive iron manufacturer of Connecticut.

An Interresting Relic.

The late Capt. Josiah Sturgis has bequeathed to Company C, Boston Washington Light Guards, a sash worn by Gen. Washington when encamped with the American army at Cambridge.

The Red Weevil is doing much damage to the wheat in Bucks and Montgomery counties. It is a long yellow worm, about the sixteenth of inch in length. In every instance it is found near to the grain. The Mediterranean wheat appears to have entirely escaped ; probably because of its arriving at a state of maturity earlier than the other variety.

Great Steamboat Speed.

The Steamer Notherner, a new vessel on Lake Ontario, made the run from Oswego to Ogdensburgh, recently, 163 miles, in 7 hours 55 minutes exclusive of stops—nearly 19 miles per hour. That's pretty fair.

A company has been organized in Baltimore, and the stock has nearly all been taken, to work one of the quicksilver mines of California.

There is considerable cholera in some of our western cities ; Cincinnati, Nashville, and St. Louis have been much afflicted. New York was never more healthy than at present.

Whipple's powder mills, N. H., exploded on the 10th inst. One man was killed, and the report of it, was heard at a distance of 30 miles.

There are 287 miles of railroad in Vermont. There are 1,049 miles of railroad in Massachusetts. There are 1,306 miles of railroad in New York.

© 1850 SCIENTIFIC AMERICAN, INC

Improvement in Photography.

Photography is making great advances in England since the discovery of taking negative pictures on glass, as described in the Scientific American in 1849, and copied into Humphrey's work on Daguerreotype, page 91.

Mr. T. A. Malone describes, in the London Athenæum of June 1, a process which he has adopted, involving one or two points of novelty, by one of which he is enabled to convert a negative picture immediately into a positive one.

He prepares his glass by rubbing it with a solution of caustic alkali, washing it with water, and drying it with a cloth; and, just before applying the albumen, he breathes upon it, and rubs it with new blotting-paper, followed by cotton wool, to remove fibres and dust; the last being indispensable to prevent the absorption of iodine by such particles, whereby the picture would be spotted and spoiled. The albuminous liquors consist of equal measures of water and white of egg, beaten together to a foam, and then strained through a paper cone or filter, having a small aperture at its apex. He pours the albuminous liquor on the glass, prepared as previously described, inclining the plate from side to side until it is covered; allows the excess to run off at one of the corners, holding the plate in a nearly vertical position; and whenever the liquid ceases to drop rapidly, he breathes on, or warms, the lower half of the plate, the moisture of the breath in the one case, or the warmth in the other, causing it to flow more freely: wiping the edges continually promotes the operation. The great object is to procure a uniform coating. When the glass is sufficiently dripped, it is dried; for which purpose Mr. M. uses a double-ring gas-burner of some eighty jets, but says an open fire answers as well, except from the danger of dust. The film, he adds, when dry, is quite free from cracks, and is so thin and transparent that the brilliancy of the glass is unimpaired, so that it is almost necessary to mark it to know which side has been coated. The next process is to iodize the albuminous film; the plan of effecting which, with the subsequent steps for procuring and fixing the negative picture, we describe in his own words:

"Dilute pure iodine," he says, "with dry white sand in a mortar, using about equal parts of each. Put this mixture into a square glass trough, and over it place the albumined plate; as soon as the latter has become yellow in color, resembling beautiful stained glass, remove it into a room lighted only by a candle or through any translucent substance —yellow calico for instance. Here plunge it vertically and rapidly into a deep, narrow vessel containing a solution of aceto-nitrate of silver, made by adding three ounces of nitrate of silver to two ounces of glacial acetic acid, diluted with sixty ounces of distilled water. Allow it to remain until the transparent yellow tint disappears, to be succeeded by a milky-looking film of iodide of silver. Washing with distilled water completes the operation. After it has been submitted to the action of the light, pour over its surface a saturated solution of gallic acid. A negative Talbotype image on albumen is the result. Washing with water, before and after immersion in a solution of one part of hyposulphite of soda in sixteen parts of water until the yellow tint is removed from the shadows, completes the process."

It is by the following slight variation of the process, at the period when the picture is being treated with gallic acid, that it is converted into a positive one:

"While the gallic acid, is developing its reddish brown image," says Mr. Malone, "pour upon the surface a strong solution of nitrate of silver:—the brown image deepens in intensity until it becomes black. Another change commences: the image begins to grow lighter, and, by perfectly natural magic, finishes by converting the black into white, presenting the curious phenomenon of the conversion of a Talbotype negative into, apparently, a Daguerreotype positive, but by very opposite agency, no mercury being present; metalic silver (probably) here producing the lights, while, in the Dagurreotype, it produces the shades of the picture.

Lloyds.

This is a word often meet with in Eglish newspapers—is a great company of underwriters, whose agents are located all over the commercial world. It is expected of the agents of Lloyds' that they ascertain the workmanship of all vessels when upon the stocks the injuries they receive in the course of their voyages—the nature of the repairs put upon them —their sailing properties, &c. &c., and transmit all the particulars to the company in England.

The accuracy and vigilence of these agents has been matter of surprise to American and other shipmasters; for it is said the condition and properties of United States ships are as accurately understood in London as in Boston or New York. A Yankee ship-master, making application at Lloyds' for insurance upon his vessel, observed that the officer referred at once to what proved to a great alphabetical register, in which were recorded the names and other memoranda regarding thousands and thousands of vessels, arranged under all the classes peculiar to that establishment, from "A 1, red letter," down to the lowest insurable class. In due time the Yankee was informed that his insurance would be so and so, (naming the terms;) that although one worthy to stand as "A 1," his vessel had worked into lower classes; that when she ran aground at such a place, she received greater damage than the owners were perhaps aware; and that the repairs put upon her when she was got off were not adequate to the injury she received, &c. &c. The surprise of the Yankee captain, in the language of romance writers, was easier imagined than described. He found they knew more of his vessel than he did himself.

In New York there is a mercantile Association conducted like Lloyd's, in another field. A number of Canadians from Montreal were as surprised at the great amount of credit they could receive, as others were at the small amount—they did not know the secret.

Charleston Cotton Manufacturing Co.

Our advertising columns of this morning announces that the books of the above company will be open to-day and to-morrow to receive subscriptions for new stock. The remarkably liberal offer of Charles T. James, Esq., to take half of a large mill to be built in our city, has aroused the feelings of every one who has the interest of Charleston at heart. We believe our capitalists are prepared to respond to this offer in an appropriate manner, and we would particularly commend the subject to our friends the planters in our district and neighborhood. Your cotton is to be worked up. Let it be done by your own mill; show by your liberality in this subscription that you can put your means into factories as well as the millionaires of the North, and that you are determined, as far as possible, to be independent of all those who would scatter firebrands among you. This mill, when enlarged, will consume of your crops, some eight or nine thousand bales, and will give employment to at least seven hundred persons; while by making your own shirtings it will save our State in labor about $170,000 per annum, and in profits, in ordinary years, at least $75,000 more—both amounts being now paid away for the same goods made at the North, and consumed at the South.—Subscribe liberally for this stock, and so evince your enterprise and disposition to promote this great industrial effort.—[Charleston Mercury.

[By the above it will be seen how much the South is aroused to the subjeot of cotton cloth making, so as to make the cotton into cloth in the regions where it grows.

Rapid Travelling.

Though our voluntary peregrinations be confined to narrow limits, although our globe is but a speek in space, and although a voyage from pole to pole would be, by the shortest route, but some paltry 12,000 miles, fortunately for astronomy, we make an annual tour in the course of our orbital revolution round the sun, which carries us to two points of space nearly 200,000,000 of English miles apart.—Seated on this comfortable railway carriage called the globe, we are actually tearing through space at the rate of nineteen miles per second, or 68,000 miles an hour; and the distance between the points of space occupied by us, the travelling spectators, on any two days, is accurately known. For instance, on the longest and on the shortest day, our positions are, as we have said, nearly 200,000,000 miles apart. Of course this annual trip makes a vast change in the celestial scenery of the bodies nearest to us. The other planets, if they did not move themselves, would appear to do so by our own relative motion; as it is, they have apparent movements, resulting from their own as well as from our earth's orbital motions. But the most extraordinary fact is this, that, notwithstanding the vast space which separates the position of our earth at opposite seasons of the year, the scenery of the fixed stars is noways sensibly distorted by our change of place. The vast distance from the earth to the sun is seen from the nearest fixed star under an angle probably not exceeding one second, which is about one two-thousandth of that which the sun's or moon's disc subtends! This is called the "annual parallax"; and, admitting it to exist, the nearest fixed star must be 206,000 times more distant from the sun than our earth is; or 5,000,000,000 diameters of our globe or about twenty billions of English miles.

East India Antiquities.

At a recent meeting of the Asiatic Society, in London, the Secretary read an official letter to the Bombay Govenment from H. B. E. Frere, Esq., resident at Sattara, respecting a library of Arabic MSS. at Bejapore. Mr. Frere suggests that the books, for many of them seem to be of great value, should be removed either to Bombay or to the library at at the Indian House. Some objections may be made to their removal by their custodians; but Mr. Frere proposes that they should be compensated by Government undertaking the repair of the building, thus averting the loss of a specimen of a very peculiar and magnificent style of architecture. The less rare and valuable volumes might be left; and the loss of the others might be supplied by a complete set of works in the native languages, published by or on behalf of the Government. These books would be of more practical value than those removed, and might form the basis of a library as useful, and as much used by the modern inhabitants, as the old library was by their ancestors.

The second paper read was "An Account of the Inscriptions of Warraputa, a cataract in the river Essequibo, South America," by Dr. G. R. Bonyun. Warraputa consists of two rapids, between which there is a bed of boulders, all of which are coated with a black glaze formed by the iron of the rock being converted a sesquioxide by the action of the water. On the rocks there are figures which forcibly strike the mind as being written characters, and not mere capricious marks. The writer entered into a comparison of several of the characters, and in conclusion laid down certain inferences as not unfairly deducible:—1. That the inscriptions are significant. 2. That their meaning must be sought in some ancient Semitic dialect —and lastly, they were inscribed by a civilized people, at a remote period of antiquity.

Interesting Discovery near Pittsburg.

The Pittsburg Gazette announces that Mr. James Sims, a painter of that city, has discovered upon the lands of Mr. Geo. Ledlie, on the line of the Perrysville Plank Road, near the head of Federal street, Allegheny City, a vein of earth about eight feet thick, and apparently containing thousands of tons, which is similar to Blake's Fire and Water-Proof Paint.—It is formed of eleven different colors, all neutral tints, suitable for painting the outside of houses, fences, &c. In the mine it is of the consistence of tallow, and on being dried, reduced to powder, and mixed with oil, it makes a beautiful and desirable paint. The Gazette states that it is contemplated to erect works and prepare it for the market. It is said to be a first rate article, and can be afforded cheap.

Delaware Powder.

The most extensive powder-mills in the world are those on the Brandywine, Delaware, and the best powder made is at these mills. They manufactured last year 2,500,000 pounds.

Scientific Memoranda.

It has long been alledged that the aurora borealis has the effect of producing a certain direction of wind, and colored aurora borealis is always indicative of a change of existing weather.

The mean annual fall of rain on the surface of the globe has been taken at 34 inches, which, taking the area of its surface, 196,816,658 square miles, would amount (at 1,000 ozs. to the cubic foot) to 431,033,808,959,644¼ tons per annum.

It is a fact undeniably proved that if sheep are allowed free access to salt, they will never be subject to the disease called the "rot."

Wooden posts or stakes driven under salt vats, owing to the preserving quality of the salt, are practically indestructible. It would be very easy to adapt this hint to the preservation of fence, garden posts, &c., as they do in Syracuse.

The elastic force of steam is the moving agent of the machinery attached to an engine, and therefore to keep the velocity constant the supply of steam must be regulated to the resistance to be overcome.

Twenty-seven inches of snow give three inches of water when melted, and the water thus obtained is found to contain ammonia, which is the cause of its great softness.

A large species of the star-fish possesses the power of breaking itself into fragments under the influence of terror, rage, or despair.

When we look at the moon through a telescope which magnifies 200 times, we behold the objects on its lunar surface in the same manner as if we were standing at a point 238,800 miles from the earth in the direction of the moon, or only twelve hundred miles from that orb, reckoning its distance to be 240,000 miles.

A cement composed of 4 parts of pure chalk and 5½ parts of fresh blue alluvial clay, will be found cheaper than any other as an hydraulic mortar.

A vessel moving through the water communicates a motion to the same, and this quantity of motion is equal to that which is lost by the moving vessel.

Potatoes.

The Germans have recently taken a particular fancy to raising potatoes. The following is their method of producing the greatest good for the greatest number:

"The potato is planted whole without any preparation, only allowing a little more space than usual. When the plants have attained the height of the hand, they are also cleaned and hoed as usual. When, however the time for drawing up the earth around them has arrived, the following process is adopted instead: the green stalks are divided and laid down by the hand on the flat soil in the form of the spokes of a wheel, and covered with the neighboring earth—the operation being readily performed by placing the foot on the plant. Some weeks later the leaves begin to push through the soil, when they are again laid down and covered with four inches of earth. This is all the labor required, and occupies about the same time as the ordinary hoeing-up process, but it produces six times more fruit. The subterranean stalks are covered with potatoes, in the form of a wreath or chaplet."

The Elephant and the Camel.

Elephants have the biterest enmity to camels. When the camel scents the elephant it stops still, trembles in all its limbs, and utters an uninterrupted cry of terror and affright. No persuation, no blows can induce it to rise; it moves its head backwards and forwards, and its whole frame is shaken with mortal anguish The elephant on the contrary as soon as he perceives the camel elevates his trunk, stamps with his feet, and with his trunk thrown backwards, snoring with a noise like the sound of a trumpet, he rushes towards the camel which with its neck outstretched and utterly defenseless awaits, with the most patient resignation, the approach of its enemy. The elephant, with its enormous shapeless limbs, tramples on the unfortunate animal in such a manner that in a few minutes it is scattered around in small fragments.

© 1850 SCIENTIFIC AMERICAN, INC

New Inventions.

New Locomotive and Value of its Patent.

We learn by the Pottsville Register, that a new locomotive, the invention of Mr. Demphul, has been tried on the Philadelphia and Reading Railroad, and with such success as to save one half the fuel of the Winant Engines. It is for burning anthracite coal :—

"The boiler of the new Engine forms as it were a cylindrical hollow-square, open only in front. Instead of the fire passing through tubes, a series of 2½ wide tubes connect the bock of the boiler with the top. They are curved over the centre of the fire which plays freely all through them. They are filled with water, which enters from the back portion of the angular boiler and is driven with great force up in to the top of the same continuous chamber. These tubes run well up into the dome and penetrate the inner boiler, leaving no external joints exposed to the fire. It is demonstrated that this arrangement gives steam more quickly with one half the fuel usually consumed."

It has also a new blower to throw back upon the fire the fine particles of carbon which are in general driven up the smoke pipe. This is a good idea—all our steamboats should have one. This engine is to be (or is now) withdrawn from the road, owing to the impossibility of the inventor and the company coming to terms—the patentee asking too much for the use of his invention. The following comments of the Register are worthy of special attention by a very great number of our readers .

"The inventor of this Engine has an idea that it will revolutionize the earth and that his patent right is invulnerable and inevadable—and no reasonable negociation can be made with him. We know enough of Engines to perceive that every separate thing claimed as new is now in use and that if he can hold exclusive right to anything he will be rigidly confined to his particular combination and arrangement, which cannot escape evasion.—Our readers who understand the principles of Montgomery's patent boiler will see that the main novelty in Demphul's is but a slight variation from the form of the other. Montgomery's boiler increases the the steam making power 40 per cent. from a given quantity of fuel. But we are equally confident that if some such a sum as $100,000 would satisfy him, he could get it by sales of his rights, whether valid or not to persons who willingly pay in such cases what is liberal and as savagely resist demands that are preposterous and oppressive. The Battins had a lesson on that subject which Mr. Demphul might study with profit. He would now be selling rights to manufacture coal-breakers at $100 a piece and putting thousands per annum into his pockets if that had sufficed. But reason forsook him ; opposition found his invention was not original and so the Supreme Court decided.''

Stereolaic Cloth.

We have received a sample of this kind of cloth from P. S. Devlan of Reading, Pa., who brought it with him from England during his recent visit to Europe. This kind of cloth, is dyed in a different manner from the old way and is also finished by a different process. The color (black) is not affected by sulphuric acid and its finish is as superior to that by the old way, as can well be imagined. It is manufactured by Gibson, Ord & Co., Leeds, and we must say, they have made a great improvement in the manufacture of broadcloth. We have a sample of cloth, dyed and finished in the old way, made of the same wool, and the difference is very striking. The Stereolaic is soft, lustrous, and will not shrink or spot with rain, and the nap is so closely laid that it is impermeable to dust.

New Tent.

A new tent, on an improved plan, has just been constructed by Mr. J. H. Landell, sailmaker, of Newark, N. J., which combines many advantages over the "wall tent," now in use in the army. It is circular in form, capable of accommodating a much larger number of persons, and hence proportionately cheaper than the tent commonly used.

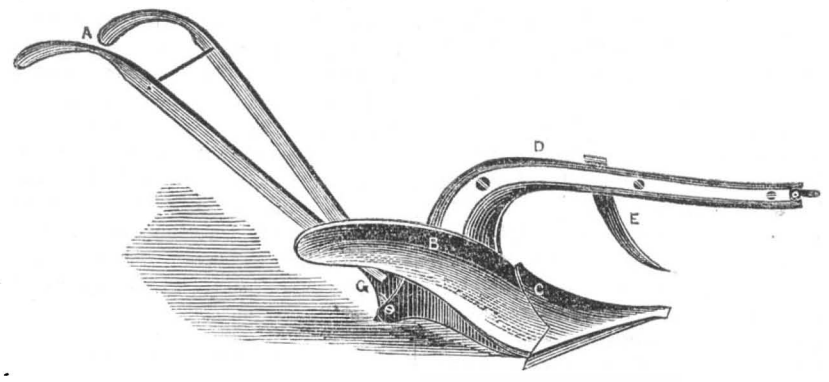
Improved Churn.

Mr. O. W. Wilkinson, of Fayette, Seneca County, N. Y., has invented a new improvement in the construction of a churn agitator, for which he has taken measures to secure a patent, and which is stated to operate most beautifully. The dashers are set on a horizontal shaft, running through the churn, into which are fixed blades, or distinct arms, each the section of a screw. This form of dasher is said to produce the butter in a very short period, is worked with great ease, and brings a better result, in a greater quantity of butter, than many other churns.

New Ink.

S. French, corner of Nassau and Spruce streets, this city, has shown us a newly invented ink, by which a copy of a letter written with it can be taken in a short space of time without the aid of a copying press. We saw the operation performed, and can really commend it as a great desideratum for business men, and to all who desire to keep copies of their correspondence. It has been secured by letters patent in England, and measures are about to be taken to secure it in this country.

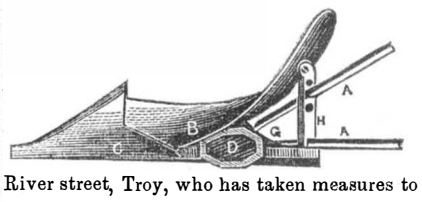
IMPROVED PLOW.---Figure 1.



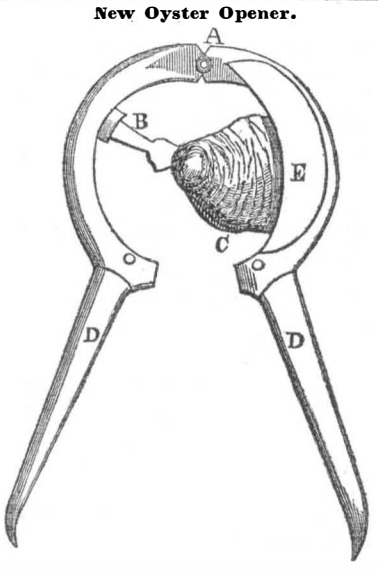
These two engravings represent a new and beautiful plow—constructed and invented by Mr. T. Baker of Troy, N. Y. Figure 1 is a side elevation, and fig. 2 is a top or plan view (looking down on it.) Figure 1 is slightly thrown up to show the bottom. The same letters refer to like parts on both of the figures.

A are the stilts or handles ; B is the mould board ; C is the shear; D is the beam ; E is the coulter ; G is the recesses to receive the lower ends of the handles, The handles pass through the guide bar, H (fig. 2.) The construction of the mould board is peculiar. This is best shown in figure 2 ; it has a gradual curve towards the back end, to turn the land completely over. In plowing sward every turf will be completely turned, as the mould board will lay the sward over at right angles to the perpendicular cutting point. The extremity of the turning angle of the mould board, is at such a gradual curving distance from the plow point, that it must work easy—its form being based upon the *solid of least resistance ;* and while it will completely turn over the land, it will do so by throwing it over with a rolling motion—the easiest of all for the farmer and his team. Another new feature about this plow is the beam. It is made of metal, either whole or in sections, and is hollow. This makes it of the least possible weight, with the greatest possible strength. The whole form of this plow is peculiarly beautiful, and along with this we may justly expect that its operative qualities will be equal to its appearance. More information may be obtained by letter addressed, post-paid, to Mr. Baker, No. 509 River street, Troy, who has taken measures to secure it by patent.

Fig. 2.



New Oyster Opener.



This instrument in our oyster-eating country will no doubt receive that attention which it deserves, and as it is free property, any one may get up one to suit himself. A is a joint which unites the two jaws ; B is the chisel, or opener, which is secured in a socket fixed on the left jaw, and can be set in and taken out at pleasure, a set screw being used to fasten it, or the socket may have an interior thread, and on the inner end of the chisel be made a screw to fit into it. C is the oyster; E is a recessed cheek fixed on the right jaw to hold the oyster ; D D are the two handles or levers. The manner of opening the oyster, in other words, using this instrument, is represented so clearly, that "he who runneth may read," and understand. It operates like a nut cracker : By placing the oyster in the cheek, E, then bringing the knife on the peculiar spot, as shown, of the oyster, and bringing the two handles together, the shell is opened in a twinkling. By this instrument a person may open at least four times more oysters in the same space of time, than by the common mode, and do it in a more cleanly manner. This instrument is the invention of M. Picault, a French gentleman of Paris.

Register Hygrometer.

At one of Lord Rosse's recent scientific soirees, Mr. Appold exhibited his curious Register Hygrometer for keeping the atmosphere of the house at one regular moisture. The instrument with a variation at one degree in the moisture of the atmosphere opens a valve capable of supplying ten quarts of water per hour ; delivering it to pipes covered with blotting paper heated by a gas stove, by which the water is evaporated until the atmosphere is sufficiently saturated and the valve thereby closed. A lead pencil is attached to register the distance the hygrometer travels ; and thus a sheet of paper moved by clock-work shows the difference between the wet and dry bulbs of the thermometer at any period of time.

A Useful Machine.

A patent has been granted to Daniel D. Gitt of Butler township, Adams Co. Pa., for a machine which it is believed will be of great service to farmers—it is a simple machine to dislodge, and convey into the furrow, the rubbish which collects upon the coulter or cutter of the plough, in the operation of ploughing ; it is worked by a lever attached to the handle of the plough.

One jerk of the lever by the hand of the ploughman, while the plough is in progress, will dislodge all rubish which may have accumulated, thus saving the necessity of having a boy to follow, or stopping frequently to clean the plough. For the plowing of large grass lands, such an arrangement in much required by farmers.

New Method of Refining Gold.

Prof. Richard S. McCulloch, who fills the chair of Natural Philosophy at Princeton College, and who previously held the office of melter and refiner of the U. S. Mint, has addressed a letter to the Secretary of the Treasury, in which he states that he has discovered a new, quick and economical method of refining argentiferous and other gold bullion, whereby the work may be done in one-half the present time, and a large saving effected in interest upon the amount which is currently refined, and withdrawn for that purpose from the use of the depositor, or from the Treasury by advances for his accommodation. The writer adds, that "in labor and materials this new method would also save about one-half of the cost required by the process now used in the Mint of the United States; so that the charge to depositors for refining, which now is, as by law directed, fixed at the actual cost thereof, may be considerably reduced. The apparatus is less costly and more compact than that used in either of the methods now employed. The advantages in respect to space are such that probably five times as much work as at present may be done in the same building. In the Mint at Philadelphia ten millions of dollars per month may be refined, and the sum of $1,000 would, I believe, cover the cost of the alterations and apparatus required."

Remington's Bridge.

On Wednesday last week, we examined the model of this bridge now on exhibition in this city. We do not wish to say much about it at present, as we may be able to present an engraving of it at some other time. Suffice it to say that it appears to be one of the most simple bridges ever designed, for cheapness of construction according to the length of span. The model is 160 feet in the clear, composed of four stringers of a little over two inches square at the abutments, and tapering to about an inch square at the centre. It is of the form of an inverted arch. The stringers are made of several pieces of white pine joined together by a scarfe joint ; their ends, when they are joined, being bevelled at a very slight angle, and the bevelled parts lapped over each other, and attached with glue, so that when united, each stringer appears to be a continuous and single piece. These joinings are so arranged as that only one of them ever occurs in the same cross section of the bridge, and they are neither bolted nor clamped, but depend entirely upon the glue for their adhesion. Each of these stringers have about nine feet bearing on the abutments or suspension piers, to which they are firmly attached by iron bolts.

Water versus Steam Power.

We have enquiries often made of us respecting the relative values of steam and water power—enquiries which we find ourselves unable always to answer, owing to the question being one wholly of practical economy ; in other words, determined by fair experience. If any of our correspondents are in possession of clear, defined results, respecting the comparative economical merits of these two powers, they will do us and the public a benefit by furnishing us with the said information.

Wheeling Bridge.

Chancellor Wallworth, to whom the Wheeling Bridge case was referred by the United States Supreme Court, has submitted to the Court that the Bridge is a nuisance. What is now to be done ? Will the Bridge have to be taken down, or the piers raised so high as to allow unobstructed progress to the tallest funnels of Steamboats on the Ohio.

Will Saltpetre Explode.

Since the explosions at Brooklyn and Philadelphia, this old mooted question is being revived with fury and fume. Getlemen, we say, don't write about what you don't know, but mind the old advice, "prove all things, hold fast that which is good."

Erratum.

On the 10th and 11th lines of the second column of page 341, for "water entirely into oxygen at the one pole, and entirely into oxygen at the other," read entirely into *hydrogen* at one pole, and entirely into oxygen at the other.

© 1850 SCIENTIFIC AMERICAN, INC

Scientific American

NEW YORK, JULY 20, 1850.

Responsibility of Editors.

The power wielded by a widely circulated and influential paper, is very great. The pulpit was once the only and mighty lever for influencing the masses, and it is still a potent engine for that purpose,—but the press has now more influence for good or evil, as it reaches every dwelling and is an oracle in every family. The editor should therefore be a man of honor in all his dealings, intelligent, and talented. He should never seek to gratify personal animosity or ambition. He should be of a forgiving and generous spirit. The man who would prostitute the press by invidious inuendoes against any one who had not an opportunity to defend himself, is not fit to fill the honorable situation of editor to a respectable journal. Above all things do we deprecate that spirit of revenge which is too often manifested in assailing the characters of individuals by covert and malignant insinuations, which create dark doubts in the minds of others. It is possible to live in a free land in respect to laws, and yet there may exist therein the worst of tyrannies—that of a disreputable press. The iron tyranny of a licentious press may be more excruciating than the iron will of a despot. We have no sympathy with the hypocrite or knave who is denounced by an honest press—that is one of its sacred callings, for it should be a watchman to guard the interests of community ; but there is no part of an editor's duty which requires more rare faculties than in the exposition of errors, whether those errors belong to individuals or communities. Had Foster's fierce and poisonous criticisms on the acting of Edwin Forrest never been published, we should not have had the terrible scene at the Astor Place Opera, nor those unhappy incidents and revelations in connection with the personal life of that great actor. And there are many editors, who, if their consciences are not seared, cannot lay their hands upon their hearts and clear themselves of all guilt in the sudden death of our venerable President.

When a man becomes conspicuous for talents, or is elevated to an important office, some editors, and their number is not small, seem to look upon him as a subject only of abuse and calumny. In the political world this spirit is prominent above all others : to be a candidate for any office, is to be exposed to infamous denunciations and malignant vituperation. This should not be; it is dishonorable and more disgraceful in our country than in any other. In every thing, and above all in conducting the public press, America should be a pattern of dignity, honorable dealing, logical disquisition and generosity of sentiment.

The Scientific American.

The Stark County Agricultural Association, Ohio, is going to award fifty copies of the Scientific American as prizes, at the next Exhibition. The Scientific American is now the best standard work in our continent, as the mirror of American inventions and the progress of the arts. It presents every week a fund of varied and interesting articles on almost every useful subject. It is the only paper that receives and pays for an official list of patent claims, weekly. Our friend John Carruthers, in his "Advertiser," at Savannah, says that *frequently* a receipt will be found in our columns worth ten times more than the subscription price of the paper.

Pennington's Aerial Ship.

We have received from Mr. Pennington an illustrated representation of his aerial ship, propelled by fans and steam power. Mr. Pennington has pursued this subject for a great number of years, and still firmly believes that aerial locomotion is the cause of God and man, and will soon burst successfully upon our mundane sphere.

Proff. Grant exhibited his calcium light a short time ago at Washington. As calcium is the base of lime, we suppose, the light is no more than the Drummond light.

Explosion of Steam Boilers.

A few weeks ago a locomotive exploded on the Western Railroad, Mass., and instantly killed the engineer, John Monegan. The force of the explosion was very great, so great indeed, that the body of the engineer was blown to a considerable distance, and the re-action drove the engine twenty rods up the grade of forty-five feet to the mile, after separating it from the tender. The latter contained a cord and a half of wood, having just been re-filled, and the whole of it was swept out and thrown high into the air, coming down in all directions around, like a shower of hail. Some of the wood was blown against the top of the first freight car so forcibly as to strip more than half of it completely off.

The subject of explosions has engaged more attention, we believe, than any other, and yet such accidents are no less frequent now than heretofore. One thing about them seems to be a subject of greater wonder than any other—that is the *force* of the explosion. Boats are shattered to atoms, as if their hulls had been gun powder magazines; and buildings are heaved from their foundations as if a volcano had burst beneath them. Many remedies have been proposed, and many reports made on the subject by scientific bodies, who have supposed that if intelligent engineers alone had the management of such machines, there would be fewer explosions; but we have found that practical engineers have had charge of mostly all the boilers which have exploded. There can be no doubt, however, but a great majority of our practical engineers, are in want of information about the nature of steam. They are acquainted with the mechanical construction and operation of the engine, but, if the question was asked "how much does water expand into its elementary gases?" we are afraid that a great number would not be able to tell. Accidents have happened when those having charge of the engine were men known to have been possessed of all the requisites, so far as practical and experienced mechanics can have, and yet relying upon their experience, based upon well known principles, were suddenly launched into eternity. The majority of explosions have occurred when the engines were started, and this was the case with the engine mentioned above, for Mr. Monegan had stopped for a short time by the way-side to decorate his engine, and the explosion took place instantaneously with the opening of the steam valve. The sudden and apparently instantaneous generation, and consequent elasticity of steam caused by the suspension of its use in the boiler, for a very short period, has been noticed by every observing engineer. This experimental fact should teach every engineer the necessity of allowing a portion of steam to escape always, and it should teach a general truth, viz., that the majority of explosions take place from over pressure. There should be some general law strictly enforced, limiting the pressure and demanding greater strength of boilers. Although the test pressure may be 200 lbs. on the square inch, the steam should never exceed the one half of this. The reverse of this rule was the cause of the Hague street explosion. The pressure on the boiler was a hundred lbs., whereas it should not have been more than fifty.

Nature and Composition of Water.—Water is composed of oxygen and hydrogen in the proportion by measurement, of 1 of the former and 2 of the latter, but by weight, 8 of the former and 1 of the latter. One cubic foot of water weight 1000 ounces, or 62½ lbs. A cubic inch of water at 60° weighs 224·46 grains of oxygen, and 28·06 of hydrogen; total, 252·52 grains. The bulk of the oxygen in a cubic inch of water is 662 cubic inches, the hydrogen 1,325 cubic inches, hence to form water there is a condensation of these two gases of nearly 2,000 volumes into one. When any quantity of these two gases in the proper water proportions are mixed together, and a spark of electricity is passed through them, they explode with a loud report, and the singular instantaneous result is water. This great and sudden contraction is mysterious and not well understood. Many believe, if water can so easily be made from its gases, it may also be as easily and quickly resolved into its gases. The great bulk of the gases of water, in comparison with the water itself, is evidence of a power in water, as destructive as gunpowder. This fact should not be lost sight of by any engineer. Water attains its greatest density at 39° degrees heat : it is then 1·00115, whereas at 70° it is 0·99953. When water enters chemically into any compound, like common salt, it is designated an *hydrate ;* when water is entirely absent from any chemical compound, it is said to be anhydrous Burnt lime is *anhydrous*, but slacked lime is a *hydrate*. Water, of old, was held to be a simple element. Its composition was discovered in 1783, by Priestley, Cavendish and Lavoisier. As the element of steam, water may be considered as the prime author of progress in the mechanic arts. Water is 815 times heavier than atmospheric air. It propels the ponderous wheel that turns a thousand flying spindles and shuttles ; if combined with caloric it propels the leviathan steamship over the stormy ocean, and inspires the iron horse with the fleetness of the hurricane,—it is a good servant but a bad master.

Death of the President.

Zachary Taylor, the President of the United States, after a few days' illness, expired at Washington on the evening of the 9th inst. His last words were, "I am prepared to die, I have endeavored to do my duty."

Zachary Taylor was born in Orange Co., Va., Nov. 2nd, 1784. At 21 years of age he entered the army and served with distinction under Gen. Harrison in the last war with England. He gradually rose to the rank of Colonel, in 1832, when he served in the Black Hawk war. In the Florida war he fought the famous battle of Okechohee, and completely defeated the hostile Indians. His distinction was moderate until the 8th and 9th days of May, 1846, on which he fought the terrible battles of Palo Alto and Resaca de la Palma. These victories over a numerous foe, with a handful of men, thrilled the heart of the nation, and he at once became the object of universal admiration. But it was not until Feb. 22, 1847, that he reached the climax of his military fame. On that day, on the field of Buena Vista, with a few thousand men, he successfully resisted a well appointed Mexican army of 20,000 men, commanded by Gen. Santa Anna. For nearly a whole day the Mexican infantry and cavalry dashed upon his handful of soldiers like waves of lava against a rock, and when the morning of the 23d dawned, the foe's haughty host were seen far away, flying, broken and vanquished. He then became enshrined in the popular heart and was elected President, to succeed Mr. Polk, an office which he only filled for the brief period of fifteen months. He was a man of inflexible honesty, very unassuming, and of great goodness of heart. He was personally beloved and esteemed by all who knew him. None questioned his patriotism but those who were devoid of the principle ; and alas for the virulence and the bad manners of our party politics, he was oftentimes maligned without a cause. He was generally considered as devoid of the qualities of a statesman and the genius of a great general, but we shall be better able to judge of his qualities when his whole life is fully revealed to the public. Wellington had the same character at one time, but who can deny him both genius and statesmanship now. All politicians are not statesmen, and a man may be a great statesman without being a politician, in the modern sense of that term. But the old General has gone where the wicked cease from troubling and the weary are at rest :—

" The lightning may flash and the thunder may rattle,
He heeds not, he hears not, he's free from all pain,—
He sleeps his last sleep, he has fought his last battle,
No sound can awake him to glory again !"

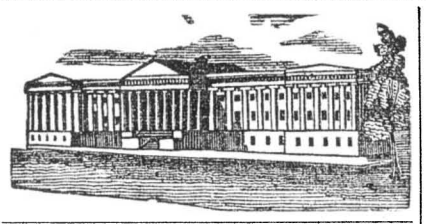
Filligree Work.

This work is a kind of enrichment on gold or silver, wrought delicately in the manner of little threads or grains, or both intermixed. In this kind of work, fine gold and silver wire are often curled in a serpentine form and braided through each other, or formed into festoons and various ornaments, entwisting the threads to give them a very beautiful effect. This art is very ancient, and was brought into Europe from the East. It was formerly much used for decorating images and the tombs of saints. The Hindoos and Chinese make some beautiful works of this kind, with tools which are very coarse and clumsy. The Malay jewellers make a great deal of silver filigree work, and gold also. They either melt their gold in an earthen rice pot or in a clay crucible. They blow their fires with the mouth through bamboo tubes, and they draw their wire much as we do ourselves ; after having drawn it sufficiently fine, they flatten it on the anvil, and give it a peculiar twist by rubbing it on a block with a flat stick. They then form it into leaves and flowers by handiwork, until they have the number to form the pattern they wish to execute on the plate. They always have the pattern beside them of the full size they wish to form on the gold plate. They fix their work with a glutinous substance made of a berry ground on a stone. They keep this substance on a piece of cocoa nut. After all the leaves of the filligree is laid on the plate—stuck on bit by bit—a solder is prepared of gold filings and borax moistened with water, which they strew over the plate, then put it in the fire till the whole becomes united. In making open work the foliage is stuck on a card with the berry paste, then the work is strewn over with the solder and put into the fire, when the card burns away and the whole remains united. If the piece is very large it is soldered several times. When the filigree is finished, they cleanse it by boiling it in common salt water and alum, and they give it a fine purple color by boiling it in water with sulphur. Except in India, China and some parts of Turkey, this art is much neglected at present.—With the great influx of gold into our country from California, we already begin to see a greater amount of jewelry worn as articles of personal and domestic ornament, and with an increase of bullion riches, there will be a proportionate increase of jewelry. With such views, a few ideas on this subject we thought might be useful in directing attention to this beautiful art.

New Method of Tanning.

The Rochester Advertiser states, in a recent article, that the Editor owned a pair of boots presented by the Journeymen Shoemakers Association, the leather of which was tanned by a new process, which occupied only an hour or two at most. If this discovery is all that it is stated to be (of which we have some doubts), viz., to make leather *equal to the French*, in such a short time, it must be one of the most valuable discoveries of the age. As the process, however, is not laid down in black and white, every man is justified in suspecting its reality. A new process, however, has come into our possession lately, which is said will tan leather better and in less time than by the old process. We give it for what it is worth. Those in the art can make experiments for themselves—the only way to test its merits. Three liquors are made up, 1st. One made of 20 pounds of alum, and 20 of the sulphate of potash, and ten of the muriate of soda, all dissolved in warm water. 2nd, 100 pounds of catechu, dissolved. 3rd. 4 pounds of alum, 2 lbs of the muriate sf soda, dissolved. For 100 calf skins in a vat of sufficient size, put one-fifth of No. 1 ; viz., 4 pounds of the alum and potash and 2 of the muriate of soda, (common salt)—then add one-tenth of the No. 2 solution, and one-fourth of No. 3. With this mixed solution enough of water is put into the vat to cover the 100 skins and the temperature is kept up so as the hand can bear it well. Men with poles rounded at their ends stir the skins for about one hour, when they are taken out. They are then placed in another vat of the same kind of solution, and the same strength, and stirred frequently for about three hours, and let stand till next morning. They are then removed, and one-fifth of No. 1 mixture, and one-fifth of No. 2 added, when the skins are returned to the vat, stirred frequently, and dripped every day for five days, when all the liquors of the solutions should be taken up, and about 20 pounds more of dissolved catechu is to be added. The skins are to be tried frequently, and more catechu is to be added if necessary, and at the end of four or five weeks the operation will be completed.

© 1850 SCIENTIFIC AMERICAN, INC



☞ Our weekly List of Patents and Designs contains every new Patent, Re-issue and Design emanating from the Department, and is prepared officially, expressly for the Scientific American, and for no other paper in the city, consequently other journals are obliged to wait the issue of the "Sci. Am." in order to profit by the expense to which we are subject, and of course must be one week behind. Those publishers who copy from this department in our columns, will, in justice to us, give proper credit for the same.

LIST OF PATENT CLAIMS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending July 9, 1850.

To J. & L. Adams, of Hadley, Mass., for improvement in machines for cutting felloes.

We claim the causing the shaft of the cutter head to automatically descend during its forward motion, until the felloe has been formed by the cutters in the cutter head, and then be thrown upwards to its standing position, substantially in the manner herein set forth, to wit, by resting the said shaft upon the movable bar, which bar is forced upwards by a spring or weight, and has a rack, and a pin, connected to its movable end; the said rack being connected with and caused to descend by the forward movement of the cutter head shaft, through the medium of the band, the shaft, and the pinions, on the shaft, which are thrown out of gear with the rack, at the proper time, by the pin and the spring, which act upon the levers, (two) and the shaft, substantially as here represented and described.

To E. Baldwin, of Philadelphia, Pa., for improvement in condensers of steam engines.

I claim combining with a tubular condenser the receiving and heating reservoir, which is connected at or near its top with the exhaust passage and with one end of the series of condensing tubes, and at or near its bottom with the other end of series of tubes, and with the exhausting and feeding pump, the whole constructed substantially in the manner and serving the purpose herein specified.

To Wm. Bullock, (Assignor to C. Graff,) of Philadelphia, Pa., for improvement in lath-cutting machines.

I claim the arrangement of the lever, in combination with the quadrant, rack pinion, ratchet, screw, and wheel, thereby moving the periphery of the log being cut, an equal distance at each stroke of the knives (the log being moved by the chuck, instead of applying the power to the periphery of the log) by which arrangement I can cut laths from square logs, substantially in the manner and for the purpose set forth.

To C. H. Cook, of Coeymans Hollow. N. Y., for improvement in Quilting Frames.

I claim the adjustable quilting frame constructed in the manner herein described, whereby the strained surface of the quilt can be placed in an inclined position, and at any convenient height, thus enabling the quilter to preserve an erect position of the head and chest while at work.

To D. W. Goble, (Assignor to G. S. Ward & G. F. Musselman,) of Newark, N. J., for improvement in apparatus for cutting dried beef.

I claim first, the combination of the knives, forming an angle to each other, as described.

Second, I claim the combination of the bed, with the other parts, to graduate the thickness of the shavings, as described.

To C. R. & J. Hight, of Geneva, Ill., for improvement in spiral churn dashers.

We claim the application of a re-acting spiral revolving dash, (the wings of which may be constructed of wood or tin, or any other suitable material,) to a box churn, as described, and set forth in the above specification, and accompanying drawings, or to any of the usual forms of churns to which it may be attached to good advantage.

To J. K. Holland, of Beaufort Co., N. C., for improvement in carts for spreading manure.

I do not claim any of the parts taken separately; but I claim the combination of the box bottom, rollers cylinder, cog wheels lever, arranged and operated substantially in the manner herein described.

To I. Jennings, of New York, N. Y., for improvement in lamp-tubes.

I claim the combination of the two conical tubes, as shown, for forming a regulator for the flame of a lamp, substantially as described.

To G. Leonard, of Shrewsbury, Mass, for improvements in revolving-hammer fire-arms.

I claim first, a central hammer to be shifted from some convenient position so as to bear on the central cone, and to be driven by the usual operations of the lock.

Second, a revolving carriage, to carry and turn the hammer.

Third, a trigger turning on a pivot in the cocking lever, and which is is thrown forward into a position convenient to be drawn by pulling said cocking lever. The whole to be substantially as herein described.

To C. Meyer, of Philadelphia, Pa., for improvement in sounding boards for pianos.

I claim supporting the bridge upon a thin base piece, secured over an opening formed in the ordinary sounding board, substantially in the manner and for the purpose as herein set forth.

To S. & M. Pennock, of Kennett Square, Pa., for improvement in seeding apparatus of seed planters.

We claim constructing the tubular drill-tooth with a hook-shaped arm, in the manner and for the purpose herein set forth, by which the drill tooth is braced laterally whilst in operation, and hooked to the axle when not in operation, and by which the angle of the drill tooth may be changed at pleasure by changing the position of the wooden pin in said arms and by which the drill tooth may be folded toward the drag-bar in backing the machine, or turning short round, whilst the drill tooth is in the ground without breaking the wooden pin, said wooden pin resting upon the top of the drag-bar instead of passing through it, as herein fully set forth.

We also claim the spiral or any other form of spring in combination with the hopper, grate and seeding cylinder, or the distributing apparatus, as will make the said cylinder, and grate, and hopper, self adjusting, each to each and to the others in case there should be a want of evenness or uniformity upon the surface of the seeding cylinder or distributing apparatus for the pnrpose and in the manner above set forth.

To O. B. Percival, of East Haddam, Conn., & Asa Smith, of New York, N. Y., for improvements in chargers attached to fire-arms.

We claim the revolving ball magazine as above specified in connection with the revolving cylinder.

To Henry Pohl, of Paterson, N. J., for improvement in machinery for measuring pulp in the manufacture of paper.

I claim in combination with the measuring vessel herein described, the adjustable lid, constructed with an opening in it communicating with the pulp chamber in the cylinder and with the atmosphere through the small cylindrical chamber, the pipe, the communication being closed and opened by the ball in the manner substantially as described for the purpose set forth.

[See engraving No 29 this Vol. Sci. Am.]

To G. E. Sellers. of Cincinnati, Ohio, for improvement in the boilers and gearing of locomotive engines for working heavy grades.

I claim the method substantially as herein described of operating the two horizontal auxiliary driving wheels of locomotive steam engines by connection with the auxiliary engines with a crank shaft having the cranks thereon at right angles substantially as described, whereby the engines are made to alternate in their action as specified.

I also claim the method substantially as described of establishing a connection between the dome and the forward end of the boiler when this is combined with the extending of the flue tubes to the top of boiler as described whereby the boiler, is adapted to heavy grades as described.

I also claim in combination with the water ways surrounding the fire chamber, the water channel at the bottom of the boiler, as described, whereby a circulation of the water is established between the two ends of the boiler.

To T. J. Sloan, of New York, N. Y., for improvement in machines for cutting screws.

I claim the method substantially as herein described, of determining the pitch of the threads of wood screws by means of a leader, the threads of which are alternately engaged and disengaged from the teeth of a comb on a sliding bar, when this is combined with a relief and return cam, which, at the end of each threading motion, pushes the comb forward to relieve the leader before it is disengaged from the teeth of the comb, and then eases off the return motion of the comb-bar, substantially as described.

To E. O. Thomas, Philadelphia, Pa., for improvement in store counters.

I claim the construction of a store counter made in two parts, in the manner described, for the purpose of varying the capacity within and at the same time time to give better security in case of burglary, and aid transportation in case of fires, as herein set forth.

DESIGNS.

To Calvin Doane, of Braintree, Mass., for design for stoves.

To E. S. Archer & R. F. Warner, of Philadelphia' Pa., for design for lamps.

To S. S. Jewett & F. H. Root, of Buffalo, N. Y.' for design for stoves.

[There are some claims so plain that the whole nature of the invention is derived from them, but this is not always the case. Whether Mr. Seller's claims for boilers and engines is suitable for other locomotives than those to ascend steep grades, we cannot tell, but from many decisions made in the Patent Office, we would have supposed that a claim for boiler improvements and engine improvements would have required two patents. This was the decision made against Mr. Ashley, of Watertown, N. Y., for improvements on a water wheel, and the tramming of the mill stone to the shaft of the said water wheel.

Reform of the Patent Laws.

We have received a pamphlet reviewing the Bill now before the Senate for the reform of the Patent Laws. We cannot tell who the author of it is, but we must say the pamphlet is distinguished by great ability. Let us quote a part of it on the re-issuing of patents :—

"The practice of re-issuing patents was adopted before there was any statute provision for it. A patent was granted many years since for a valuable machine for making hats, which soon became the subject of litigation, by reason of the temptation offered to cupidity by its great value. On legal investigation it was found that such were the technical defects of the specification, that the patent was invalid at law. Judge Thompson looking to the public policy of protecting the rights of inventors, and the difficulty of accurately defining the boundaries of an invention, and the wickedness of destroying the equitable rights of the patentee, by reason of technical errors alone; intimated in giving his opinion on the fatal defects of this patent, that on the surrender of the original and defective patent, it was competent for the Secretary of State, (the immediate Chief of the Patent Office,) to make a new grant for the same invention for the residue of the term. This suggestion was adopted and confirmed by the Secretary of State, and the patent thus re-issued, came again before the Courts, and was sustained. The practice thus approved by the highest legal talent of the country, was shortly confirmed by the wisdom of Congress, in the passage of an Act, approved 3d July, 1832—the 3d Section of which contains the same provisions relative to the re-issue of patents, as the 13th Section of the Act of 1836. The example of wisdom and sound public policy, set in this matter by the United States, was soon followed by England and some of the continental nations of Europe.

Such is the origin and progress of the system of re-issuing patents for the correction of errors. Repeal this provision, and the meritorious inventor will again become the prey of unprincipled cupidity. As in former days, the inventor will be surrounded by a host of eager sharpers, cunning enough to avail themselves of all technical errors, of which there must necessarily be not a few, in so complex and difficult a subject. No law can be called just, which does not make provision for the protection of equitable right endangered by technical errors; and the wisest nation have always used equity to temper the severity of law. Is the present Congress willing to retrograde at this late day? to subject inventors, constituting as they do, a most useful order in society, and therefore entitled to fair equitable protection, to the stringency of technical rules, under which the commission of an error, however innocent, makes an utter sacrifice of the most valuable rights. It seems impossible that Congress can do this; and yet, if the provision for the re-issue of patents be repealed, such will be the unavoidable result. To illustrate this, it is only necessary to state the fact, that in the last three years, scarcely a single patent submitted to the examination of the Courts, for violation of the patentee's rights, but contained more or less technical errors, amply sufficient to break it down in a suit at law, brought for that purpose,—and of these technical errors, the infringers had evidently in every instance, taken advantage. But fortuately, the wise and just provisions of the Statute have in such cases, enabled the patentee to fortify himself for the future. The cunning pirates escaped unpunished for their past trespasses, but their future career of wickedness was checked.

It has recently been stated in the Senate, that by the re-issue of a patent, the patentee, is enabled to introduce subsequent improvements made not only by himself, but by others. This is all a mistake, for if it can be proved that the re-issued patent covers anything not really contained in the invention at the time of the original grant, the re-issue is null and void. There is no rule of law better settled than this, and none to which the Patent Office has paid stricter observance. It is notorious that a certain gang of pirates who have been preying upon the property of honest inventors, have endeavored through the public prints and otherwise, to produce on the public mind the impression, that great frauds have been committed in the re-issuing of patents. They have cried "stop thief" that they might escape the detection of their own theft: they have even gone so far as to petition Congress for the repeal of patents, on the ground that they had been fraudulently re-issued; all the while well aware of that rule of law above referred to, under which evidence of such fraud will make the patent null and void. These facts expose the game these individuals are playing. Some of them have used their ill-gotten wealth, the very wages of their sin, to pollute the spring from which flows the stream of public information, the press itself.

If the patentee makes a technical error in his specification, it will not be discovered till some cunning knave searches for it with the view to infringe the patent. The infrigement will of course, lead to litigation, and the error will be disclosed by legal investigation—is it just—is it equitable—that an error thus made, and thus disclosed, should destroy the rights of the patentee? The present law on the subject of re-issues, is the result of judicial suggestion based in equity—it has received a definite construction from the highest judicial authority, and the rules of practice under it, are now well established and understood—every counsellor when called upon for an opinion in a question of infringement, advises his client, not in reference to the strict letter of the patent, but to the whole invention: because he knows that a re-issue will remedy all technical errors. In this way the law is made to subserve the ends of justice—but if the provisions of the 4th Section of the proposed law be enacted, chicanery will usurp the seat of justice, and the honest inventor will be driven forth to escape the best way he can from the snares of the cunning pirate.

Preston, the American Historian, is quite a lion in London just now. Such a man commands respect everywhere among those who have souls to appreciate worth and ability.

Francis Bowen, editor of the North American Review, has been chosen Professor of History in the Howard University. He will make a good teacher of submission to the will of despots.

There is a tremendous palpitation in the heart of office holders at present, as the new President may like to use a broom.

© 1850 SCIENTIFIC AMERICAN, INC

TO CORRESPONDENTS.

"J. C. P., of Tenn."—We can forward you all the Nos. of Duggan's work: subscription price $9.

"R. C. M., of Ill."—We think we have published all we care to at present upon the subject. $1 received and the numbers sent.

"A. W. P. of O."—We have not heard that your application has been neglected, and we should be *quite* as likely to hear of it, if it met such a fate, as your neighbors. Tell your friends that refrigerators is too cool a subject to worry about this hot weather. We are expecting to hear from your case daily; you can manufacture and sell without invalidating your rights to a patent in the least, and we should advise you to do so.

"S. E. C., of Mass."—If you can arrange friction rollers so as to totally annihilate friction, you have the most important invention yet discovered. There are many combinations used to diminish friction, but none that approach to annihilating it.

"A. A. D., of Miss."—Your revolving hoe appears to be new and patentable. The best thing for you to do is to send a model. We will inform you of the way by letter. If you send a little better drawing on one sheet, and a more full description, we could file a caveat.

"S. O. L., of Ohio."—Your boiler is certainly different from any we have seen, but is it not very expensive to make and complicated. To us it would appear to have advantages in the rapidity with which you can generate steam and get it up. These are, no doubt, important advantages, and should be secured by patent. The first thing for you to do is to make a model, and employ an agent to do the business, as drawings and duplicates will have to be made.

"A Mechanic, Weare, N. H."—Had you signed your name to the letter which you sent us, it would have been answered according to the best of our ability, but as no proper name was attached to it, your communication has been consigned to oblivion. When will you learn, with others of our correspondents, that no letters can receive replies from this office unless the writer attaches some other than an anonymous signature?

"F. L., of N. Y."—The pressure rolls, independent of feeding, are claimed in the Woodworth patent, and Mr. Gibson would surely be successful if you contested the right with him.

"H. W. G., of N. C."—Hurriedly we would say, do not let the steam enter the liquor for distilling. The spirit could be driven off, however, by a steam pipe or a coil in the still.—You will hear from us soon.

"W.H.N.,of Tenn."—We do not see where a claim could be instituted, and there is nothing in the way of your using it freely. You cannot rip larger timber than of the conjoint diameter of the two saws. The principle of arranging them as adopted by you, has long been known. The changing of the speed of the saws is a common arrangement and could not be patented. So far as we understand it, and we believe we comprehend it all, you can use it freely, but could get no patent.

"D. B., of N. Y."—Your door hasp does not present any thing patentable, and we could not advise you to spend any money on the same.

"T. J., of N. Y."—We are much obliged to you for your kind letter—will try and answer you soon. There is a good pump named Stiven's: see our advertising page.

"J. S., of Ky."—We would have published either one or other of your articles, but they were so long that we did not like to occupy the room, and the last one would cost considerable for an engraving. On your side *we* have given always a favorable opinion.

"E. G. W., & G. F., of N. Y."—We believe the rim is patentable, but we do not see how any claim can be made upon the bevel gearing.

"A. W. McD., of Va."—There is not a single work on the subject to show the relative value of steam and water power. The market value of the power, is what will have to be decided on.

"S. R., of Md."—We believe your instrument is patentable; you will hear from us in a short time.

"A. C. L., of Mich."—We did not know that Mr. Bolles had a patent; you can easily ask him to show it you; perhaps it was secured long ago. We do not see anything in his or yours that we could consider patentable for the whole operation is well known in other machines.

"B. T., of Me."—There seems to be decided novelty in your invention, but it is a matter of doubt with us whether you had better patent it or not. If you desire to control the entire practice, the secret could be kept better without than with a patent; of this, however, you are the best judge.

"G. D., of Va."—Much will depend upon your management. We cannot advise in the premises, not knowing either party.

"A. M. W., of Mass."—We will look into the business further, and speak if necessity occurs. We mean to be well advised on the point.

"J. A., of N. Y."—Your letter has been filed away. Of course we are not at liberty to enter into any controversy with the parties:—your letter is not the first we have received in regard to the same subject.

"W. W. H., of Pa."—Yours of the 12th has been received; we shall examine the matter when the time comes round.

"J. D., of Pa."—Your model had not arrived when our paper went to press.

"J. C. O., of R. I."—Your article has been examined; we cannot publish it, because we know it to be contrary to the facts in the case. Our columns are not open to malignant imputations against any one—facts we must have.

"E. P., of Ind."—You are mistaken about the "gutta percha;" it is the sap of a tree, and abounds in the island of Singapore and in the Malayan Peninsula. It is not found in this country as you suppose.

"J. M., of Mo."—An octagon is a plane geometrical figure contained by eight sides, and consequently having eight angles. When the sides and angles are equal, the figure is a regular octagon.

"C. E. A., of N. Y."—We are not aware that such a proposition has ever been made; if it has we have entirely forgotten the date. It could not be accepted at any rate, it being of no practical utility.

"O. S., of Tenn."—Your idea strikes us very favorably, and we have no idea but that you would be able to obtain a patent for it, a model will first be required. You had better construct one without delay and send it to this office.

"H. M. P., of Mass."—We shall publish, next week, the relative answer in your letter to our article. It is our duty to discuss all such questions. The daguerreotype by Staites' Light is three years old.

"C. C. A., of Miss."—No, Sir, we cannot do it: our position is independent of all such subjects.

"A. E. B., of Ohio."—We attend to the purchase of all kinds of machinery, and will receive your order as soon as you are prepared to send it forward.

"G. G. H., of N. Y."—We have just received your letter.

"C. S., of Ky."—We do not see any part of your pump on which to base a new claim.

"J. K. H., of Ala."—Your specification has been received, the alterations made as suggested, and the application filed in the Patent Office.

H. & R., of N. Y.; A. W. D., of Me.; O. W. W., of N. Y.—Your specifications and drawings were immediately forwarded to the Patent office, on their arrival at this office.

Money received on account of Patent Office business, since July 12th, 1850:—

T. H., of N. Y., $20; O. W. W., of N. Y., $50; T. R., of Conn., $30; D. N. P., of Tenn., $45, and R. N. G., of Me., $30.

Important Notice to us!

Whenever any of our friends order numbers they have missed—we shall always send them, if we have them on hand. We make this statement to save much time and trouble, to which we are subjected in replying, when the numbers called for cannot be supplied.

Back Volumes Scientific American.

We are obliged to inform our patrons that complete sets of all the past Volumes are entirely exhausted. We have a few incomplete sets of Vols. 2 and 3, comprising about 50 Nos. of both Vols., which may be had by remitting one dollar, and we have sets of above 40 Nos. each of Vols. 3 and 4 which will be forwarded by mail an the receipt of one dollar for each set. Those desiring to secure Vol. 5 but have delayed subscribing at first, are advised to remit $2 without delay or they may be disappointed in getting a volume at all, should they wait until the Nos. are all published?

An Improved Straw Cutter.

We have for sale a most excellent Straw Cutter, constructed upon an entirely new and improved principle. It was left at this office by the inventor, who wished us to dispose of it for him. It is easily kept in order and executes very rapidly. Price $12, carefully boxed. Address Munn & Co.

ADVERTISEMENTS.

Terms of Advertizing.

One square of 8 lines, 50 cents for each insertion.
" 12 lines, 75 cts., " "
" 16 lines, $1,00 " "

Advertisements should not exceed 16 lines, and cuts cannot be inserted in connection with them for any price.

Patent Office.

128 FULTON ST.

NOTICE TO INVENTORS.—Inventors and others requiring protection by United States Letters Patent, are informed that all business relating to the procuration of letters patent, or filing caveats, is transacted at the Scientific American Office, with the utmost economy and despatch. Drawings of all kinds executed on the most reasonable terms. Messrs. Munn & Co. can be consulted at all times in regard to Patent business, at their office, and such advice rendered as will enable inventors to adopt the safest means for securing their rights.

Arrangements have been made with Messrs. Barlow and Payne, Patent Attornies, in London, for procuring Letters Patent in Great Britain and France, with great facility and dispatch.

MUNN & CO.,
128 Fultonstreet, New York.

A LIST OF VALUABLE SCIENTIFIC AND MECHANICAL BOOKS,

FOR SALE AT THE SCIENTIFIC AMERICAN OFFICE.

Ranlett's Architecture, 2 Vols., bound,	$12,00
Minifie's Drawing Book,	3,00
"Scientific American," Vol. 4, 40 Nos., unbound,	1,00
scription	3,00
Scribner's Mechanics, Tuck, Gilt,	1,25
Treatise on Marine and Naval Architecture,—published monthly, 12 Nos., each	,75
Leonard's Mechanical Principia,	1,50
Mahan's Civil Engineering,	3,00
Morfitt's Chemical Manipulations,	2,50
Annual of Scientific Discovery for 1850,	1,00
Duggan's great work on the Stone, Iron, and Wood Bridges, Viaducts, &c., of the United State's Railroads. Published monthly in parts to be completed in 12 parts. Parts 1, 2, 3 4, 5 and 6 now ready, each	,75
N. B. This work is supplied to subscribers only.	
Graefenberg Manual of Health, (noticed in No. 41,) an excellent work, bound, 75cts., unbound,	,50
N. B. The latter sent by mail.	
Foote's Counterfeit Detector, a new and enlarged edition, with glass, mailable.	1,00

MATTEAWAN MACHINE WORKS.—Locomotive Engines, of every size and pattern. Also tenders, wheels, axles, and other railroad machinery. Stationary engines, boilers, &c. Arranged for driving cotton,, woolen and other mil. Cotton and woolen machinery of every description, embodying all the modern improvements. Mill geering, from probably the most extensive assortment of patterns in this line, in any section of the country. Tools, turning lathes, slabbing, plaining, cutting and drilling machines. Together with all other tools required in a machine shops. Apply at the Matteawan Co. Work, Fishkill Landing, N. Y., or at No. 66 Beaver st. New York City, to
40tf WILLIAM B. LEONARD, Agent.

PROSSER'S PATENT LAP-WELDED Boiler Tubes—Diameter, Number and Length of each at date:—

Inches.	In Stock.	Afloat.
1 1-4	999 7-0	——
1 1-2	147 10-6	——
1 3-4	29 10-6	150
2	— 10-0	350
2	88 12-0	805
2	194 14-0	714
2	460 15-0	840
2	66 6-6	——
2	47 4-9	——
2 1-4	418 15-0	——
2 1-2	320 15-0	——
2 3-4	150 15-0	200
3	— 15-0	50
4	29 15-0	——
5	1 15-0	——
6	14 15-0	——

THOS. PROSSER & SON, Patentees,
July 9th, 1850. 28 Platt st., New York.

VON SCHMIDT'S CENTRIFUGAL PUMP.—These superior pumps, which took a Gold Medal at the Fair of the American Institute, in 1848, and a Diploma in 1849, illustrated and described in No. 19, Vol. 5, Scientific American, are offered for sale by the subscriber, of a capacity to throw from 40 to 5000 gallons per minute. A great many certificates can be shown from gentlemen who have them in constant use. State, county, and town rights for sale. Address, post-paid, DANIEL BURR, 70 Pine st., New York. 42 4

JUST ISSUED—A new edition of Minifie's Mechanical Drawing Book, substantially bound in paper, which can be forwarded through the mail.—Price $3. For sale by MUNN & CO., Agents, New York. 42tf.

NEW STYLE AND IMPROVED SLIDE LATHE.—SCRANTON & PARSHLY, New Haven, Conn., will sell the best slide Lathe for $150 to $200 less than ever before sold. They are built in the most substantial manner—the heads geared and arbors large and of the best cast steel; the slide rest is held to the bed by guides, fed by a screw 2 in. diameter, and feeds from 80 to the in. to 5 1-2 in. pitch, working several hundred different pitch threads within these extremes. Besides the regular lathe feed it has the facing up feed. It is admirably adapted for holding and boring boxes, cylinders and turning and cutting screws. One extra large size face plate, centre rest and reversing pullies go with each lathe. The 12 ft. lathe weighs 4000 lbs. turning 8 ft. 5 in., price $450. The 15 ft. 7 in lathes 4500 lbs., turning 12 feet, $500, swings 26 in. For further particulars address as above, (p. p.) Other lathes for sale as heretofore. 34tf

ALCOTT'S CONCENTRIC LATHES.—We have on hand a few of these celebrated Lathes, which the inventor informs us wil execute superior work at the following rates:—

Windsor Chair Legs and Pillars, 1000 per 11 hours. Rods and Rounds, 2000; Hoe Handles, 800; Fork Handles, 500; Broom Handles, 150, per 11 hours.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch, and work as smoothly as on a straight line, and does excellent work. Sold without frames for the low price of $25—boxed and shipped, with directions for setting up. Address, (post paid), MUNN & CO.,
14tf At this Office

TO PAINTERS AND OTHERS.—American Anatomic Drier, Electro Chemical graining colors, Electro Negative gold size, and Chemical Oil Stove Polish. The Drier, improves in quality, by age—is adapted to all kinds of paints, and also to Printers' inks and colors. The above articles are compounded upon known chemical laws, and are submitted to the public without further comment. Manufactured and sold wholesale and retail at 114 John st., New York, and Flushing, L. I., N. Y., by
QUARTERMAN & SON,
36 3m Painters and Chemists

COTTON, WOOLEN AND SILK MANUFACTURERS' DEPOT.—ANDREWS & JESUP. No. 70 Pine st., N. Y., dealers in articles for the use of Cotton, Woolen and silk manufacturers, and agents for the sale of shearing, carding, burring, napping, wool-picking, flock-cutting and waste machines, regulators, satinet and jean warps, &c. Weavers' reeds and heddles, bobbins and spools, of every description, made to order. Sperm, lard and olive oils and oil soap. 40tf

TO LUMBERMEN.—The subscribers have obtained a patent for an improved mode of hanging Mill Saws, in which the saw is self-adjusting and self-straining, and is as easily kept in order as any other mill. We dispense with the old frame or gate entirely, thereby saving one-third of the power and three-fourths of the wear and tear incident to the old fashioned mills. These machines will be kept constantly on hand for sale. Letters post-paid may be addressed to us concerning this improvement or for territory, at Wilkes Barre, Pa.
41 4* E. H. & S. E. PARSONS.

MECHANICS' FAIR AT BOSTON—(To be held September, 1850.)—The New England Patent Agency, Haskins building, Boston, will receive patented machinery, or other articles, place the same in the above Fair, and take orders for them, or dispose of the Right, for a reasonable commission. They will also, if desired, exhibit them before or after the Fair, at their own spacious rooms. Storage free, and no expense charged except freight and cartage. Inventors should lose no time in forwarding their articles. DARIUS WELLINGTON, Agent
39 8 New England Patent Agency.

STEAM ENGINES AND BOILERS.—The undersigned has for sale one engine of 12 horse power, 1 of 6 and 1 of 5 horse power, new and of good quality; also one second-hand engine and boiler, 14 horse power, for $950, in good repair; 1 of 6 horse power, in good working order, with boiler, for $300. Steam Boilers made to order at the lowest cash prices and of the best materials; also planers, fan blowers, heaters, pumps, shafting pullies, &c., at No. 4 Howard st., New Haven, Ct. AARON KILBORN.
42 6*

WOOD'S PATENT SHINGLE MACHINES—These excellent machines, illustrated and described in No. 23, Vol. 5, Scientific American, are offered for sale in Town, County and State Rights, or by single machines. There are three sizes, the first cuts an 18 inch shingle, price, $100; 2nd cuts 24 inch, price $110; 3rd, 28 inch, $120. Orders addressed to J. D. Johnson, Easton, Conn., or to Munn & Co., "Sci. Am." Office, will meet prompt attention. 36 tf

MACHINERY.—S. C. HILLS, No. 12 Platt Street, N. Y., dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills Kase's, Von Schmidt's, and other Pumps, Johnson's Shingle machines, Woodworth's, Daniel's and Law's Planing machines, Dick's Presses, Punches, and Shears; Morticing and Tennoning Machines, Belting, machinery oil; Beal's patent Cob and Corn Mills; Burr Mill, and Grindstones, Lead and Iron Pipe, &c. Letters to be noticed must be post paid. 33tf

BURR MILL STONES.—We have made arrangements which will enable us to supply all kinds of French Burr, Holland and Esopus Mill Stones of the best material and manufacture, at the lowest prices. Burr Mill Stones made to order and warranted to be of the best quality; Burr Blocks for sale.—Orders addressed to MUNN & CO., post-paid, at this Office, will meet with prompt attention. 41tf

IMPORTANT INVENTION.—GURLEY'S beautiful and unique machine for gumming saws, noticed in No. 50, Vol. 4, Scientific American, is now offered to the public as a most important desideratum for saw-manufacturers and all who use saws, as they can gum the teeth with very little trouble.—Orders addressed to G. A. KIRTLAND, No. 205 South street, (p. p.), will meet prompt attention. 36 tf

FOREIGN PATENTS.—PATENTS procured in GREAT BRITAIN and her colonies, also France Belgium, Holland, &c., &c., with certainty and dispatch through special and responsible agents appointed, by, and connected only with this establishment.—Pamphlets containing a synopsis of Foreign Patent laws, and information can be had gratis on application
JOSEPH P. PIRSSON, Civil Engineer,
33tf Office 5 Wall street, New York.

TO THE THINKERS OF NEW YORK. KNOX is desirous that every rational man in want of a hat, should, for a moment, think before deciding where they shall supply that want. KNOX thinks that 128 Fulton st, is just the spot. 38 8*

© 1850 SCIENTIFIC AMERICAN, INC

Scientific Museum.

Lightning and Lightning Conductors.

(Prepared for the Scientific American.)

No. 3.

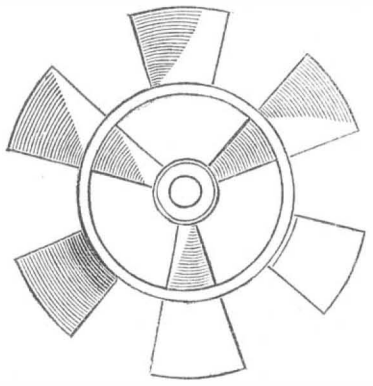
The chain itself has no advantage over the rod conductor for buildings. For ships it has one advantage in its form over the rod, as it is better calculated for and more applicable to the standing rigging of vessels, for by its means the desirable end of carrying outside and overboard the charge of electricity is obtained; but to ensure perfect security by a sufficiency of surface and approximately perfect continuity, the chain must be made of as large a size of copper rod as that before given; this is an objection, for in consequence of the form of the link, &c., the necessary quantity of material to form it perfectly is considerably more than is required for the purpose of conduction; the weight, of course, is considerable, and unless the cost is unnecessarily great, it is liable to break from its own weight and form, and when arranged as a permanent conductor is subjected to the lowering of the upper masts. The wear from its own weight and the friction produced by the continuous motion of a vessel, comparatively soon damages the chain, and wear the links, if applied as a temporary means to guard against electric discharges; and when it has to be triced up on the indication of a coming storm, its application in time of course depends entirely upon the foresight and judgment of those in charge of the vessel; these are amongst the principal objections to the chain. The next form is that of the tube. When intended for buildings, this form if of sufficient size possesses equal advantages with the rod. For marine purposes, the same reasons for its inapplicability exists as in the copper rod. The next form is that of flat copper strips or ribands, which for building purposes possess no advantages over the rod, and they are as difficult of application and considerably more expensive. But it is for marine purposes they were principally intended; they are formed by 2 plates of copper, each 2 to 4-inch wide, and one 1-8th inch and the other 1-16th inch thick. These have holes drilled and countersunk in them, and are rivetted together, forming a plate 3-16th inch thick; these plates are let into the masts, the masts having been previously grooved and dovetailed to receive them from the cap at the head to the foot of the mast on its after side; these being let into and securely spiked and fastened to the lower, top, topgallant, and superior masts—the highest of which is terminated with a copper vane and spindle, fitted into a socket-cap, under which and in mechanical contact is placed the copper strips, which are continued down the several masts; and where the foot of the upper mast comes into the cap of the lower mast, contact is intended to be made, it is a loose tongue or flap, hung on centres to allow of the mast traversing up and down in the cap; the lower mast is fitted with the plates in the manner before described, they are continued down until they reach the step of mast over that by a branch running fore and aft; the charge is here divided and passes through copper bolts, fastening this horizontal plate to the keelson, &c., and in the under side of deck-beams another set of plates are placed, they branch off abruptly to each side of the vessel at about right angles with the mast. The objections to this kind of conductor are great expense, the destruction to the masts of all ships to which they are applied, should it be necessary to remove them; the injury to the spars by applying these conductors, from the insertion of the spikes and the consequent splitting of the masts and admission of wet. The principle objection to the system is leading lightning into the ships, in heavy discharges explosions would take place, and damage or set fire to the ship. The liability to the interruption of their continuity is great, and would easily escape detection; a break of 1½ degrees would certainly cause an explosion. The next form of conductor is the Copper Wire-rope. This completely fulfils several conditions. It is composed of the best conducting metal (commercially considered), it posseses the most perfect continuity of its parts, it has ample electrical capacity, and its form gives the greatest amount of surface for the quantity of material employed.

History of Propellers and Steam Navigation.

[Continued from page 344.]

ERICSSON PROPELLER.—(CONTINUED.)

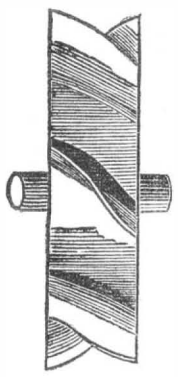
FIG. 70.



Continuing this subject, the accompanying engravings represent the Ericson propeller applied to the Princeton and to the Robert Stockton, the latter vessel being tried successfully on the river Thames as a tug boat, in 1839. It was named after Commodore Stockton, who introduced the screw into the American navy. The propeller, figures 68 and 69, page 344, some have contended was the best form of all, as the broad shovel ends were fixed at a mean angle of 45°. It was the one preferred by Woodcroft, as adopted, and termed the "Liverpool Screw."

The advantage of the Ericson screw, figs. 70 and 71, is in having a ring within the arms, whereby any number of blades can be fixed, and a large area of surface obtained in a very judicious manner. The Great Britain, which was lost in Dundrum Bay, in 1848, had a four-bladed Woodcroft Screw, and she made most excellent time—some having supposed that she was wrecked on this very account, her commander not being aware of her great speed. With respect to a screw of equal, and one of an increasing pitch, Mr. Woodcroft tried a fair experiment with two such, of equal area, placed at the stern of a vessel, and he found that the screw of an increasing pitch gave the greatest impulse to the vessel, turning it from its direct course—thus showing that the two forces were unequal—the greatest effect being produced by the screw of an increasing pitch.

FIG. 71.



The amount of slip in a screw is not yet so well known, owing to the difference of opinion about the best form and the proper diameter of the screws. The four bladed Liverpool Screw, page 344, was enlarged three times, and every time improved the speed of the vessel. The speed of the engines remaining the same. This was no doubt owing to its being too small at first. The area of a propeller must be in proportion to the body to be moved, but what that area should be precisely, is not yet generally understood. In paddles it is well known that the vessel does not move through the same space as the wheels, the difference being 1000 for paddles, and 739 for the speed of the vessel.

The following formula from Tredgold is laid down by Galloway to determine what pitch a screw should have:—"To the speed in feet per minute add the amount of slip, and divide by the number of revolutions, the resultand is the answer. Thus, intended speed of vessel 10 miles per hour or (860) feet per minute; the amount of slip 2 miles or (172) feet per minute; number of revolutions, 120 feet per minute:—

$$\frac{860+172}{120}=8{\cdot}6 \text{ feet.}$$

Lord Rosse's Telescope and the Binary Stars.

To Sir William Herschell the honor of discovering this extraordinary combination of the heavenly bodies is due. That great man remarked that there were many instances of two stars being placed so close together as to appear to the eye as one, it being only by means of the telescope that their separate orbs could be descried. This might, no doubt, if it happened in one or two instances, have been the accidental effect of their rays combining as they reached the earth—the stars themselves being sufficiently far apart in distance, if not in direction. But extended observation soon showed that this combination occurred far too frequently to be the mere effect of accidental similarity of direction; there is no position in astronomy better established than the fact, that two, three, or more stars, may be found in combination revolving round each other, and exercising a combined influence on the planetary systems relating to each. The matter has been especially followed up by Sir John Herschell, the illustrious son of an illustrious sire, and his speculations are not among the least interesting which are brought before the reader. It has long been known, and may in fact be detected without the aid of an instrument, that the stars are not all of a uniform color. The same diversity prevails among the combined stars, and in all probability that diversity will be felt in the planets under their control. "It may be easier suggested in words," says Sir John, "than conceived in imagination, what a variety of illumination two stars—a red and a green, or a yellow and a blue one—must afford a planet circulating around either, and what cheering contrasts and grateful vicissitudes a red and green day, alternating with a white one and with darkness, must arise from the presence or absence of one or both from the horizon."

But the most important consideration arising out of a view of these complex arrangements, is the duration of the season thus caused by their combined influence, as ascertained by the orbits in which the stars and their system move. In our own system, the centre of gravity, undisturbed by any other large mass, lies near the centre of the sun, and the planets accordingly roll round that luminary in an orbit so nearly circular as to produce seasons of almost equal duration. But it is not so with the complex system under consideration. In the presence of several luminaries each of them exerting the force of attraction, in proportion to their bulk, the centre of gravity must reside with neither, but at some point apart from both; and hence the motion of the dependant planets must be more or less elliptical, considered in relation to the suns on which they depend, acording to the complexity of the arrangement. This shows how recent discoveries in astronomy may be made to throw light upon the not less extraordinary disclosures of the sister science of geology.

Strange Phenomenon.

The Lake Superior Journal has the following account, as given by an eye-witness, Mr. J. Spaulding, of a singular phenomenon which occurred in Two Heart River, on the Southern shore of Lake Superior. It is worthy the attention of geologists. About 11 o'clock in the day of the 18th ult., Mr. Spaulding's attention was attracted to a slight agitation of the water near the shore, and very soon he saw the land suddenly rising out of the water a few rods from the shore, and within a stone's throw of himself. The beach opposite was also raised up at the same time to a height of some twelve feet.

The new island is round, and about 150 feet in circumference, and is raised above the water six feet, and the rise on the beach, which is wide at this place, is of about the same size, and looks like a hillock of sand. The new island was at first covered with sand and pebbles like the bottom of the lake, but the waves have dashed over it since and washed it down to a black clay. The water was about 5 feet deep where the island was formed, and a boat had passed over the very spot not five minutes before its formation.

A few rods from the beach, back on the rise of ground, a great depression of the earth took place as remarkable as the upheaving in the water. A circular spot of ground, some fifty rods in circumference, covered with trees, was suddenly sunk down to the depth of 20 feet below the surface.

No agitation of the earth, or noise took place, and the cause must have been much less powerful than the internal convulsions of the earth that usually accompany such phenomena.

Theophilus Fiske has been prosecuted in Raymond, Mississippi, for obtaining money under false pretences—that is, by the Practice of Psychology and Biology. The magistrate gave a decision that the matter was a scientific one for scientific investigation.

A meteor, resembling a ball of fire the size of a four pound shot, was seen at Portland, Me., a few days since, to issue from a cloud in the northwest; it passed rapidly over the city, entered another cloud, and exploded, and the report was heard almost instantly.

LITERARY NOTICES.

AMERICAN RAILWAY GUIDE for the United States, for July, contains 32 extra pages, making 130 in all, forming the most complete and accurate guide ever published. It gives the starting time, fares, distances, etc., on all the railway lines in the United States, together with a map. This work is published every month, corrected by Curran Dinsmore, Pathfinder Office, 138 Fulton street, and sold for 12 1-2 cents a copy or $1 per annum. No person should be without it who has any idea of ever leaving home. It is as indispensable as an umbrella on a rainy day.

We notice that our old friend Isaac Crooker has assumed the sole proprietorship of the "Yankee Nation," and has just commenced a new volume. It is now issued in quarto form, and is one of the most elegant and entertaining literary journals now issued. We wish it abundant success. Published in Boston at $2 per annum.

THE AMERICAN FARMER.—This excellent monthly magazine, published by Samuel Sands, Baltimore, Md., commences its sixth volume with its July number. For variety, number, and quality of articles on agriculture, this magazine has no superior in our land.

SOUTHERN LITERARY GAZETTE:—Published in Charleston, S. C., by Walker & Richards, at $2 per annum.—This is one of the most interesting weeklies in America, and deserves an extensive patronage. The same firm also publish monthly the Southern Eclectic Magazine at $1 per annum.

INVENTORS AND MECHANICS.

FIFTH YEAR OF

The Best Mechanical Paper

IN THE WORLD!

A New Volume of the

SCIENTIFIC AMERICAN

is commenced about the 20th of Sept. each year, and is the best paper for Mechanics and inventors published in the world.

Each volume contains 416 pages of most valuable reading matter, and is illustrated with over

500 MECHANICAL ENGRAVINGS

of NEW INVENTIONS.

☞The Scientific American is a Weekly Journal of Art, Science and Mechanics, having for its object the advancement of the INTERESTS OF MECHANICS, MANUFACTURERS and INVENTORS. Each number is illustrated with from five to TEN original ENGRAVINGS OF NEW MECHANICAL INVENTIONS, nearly all of the best inventions which are patented at Washington being illustrated in the Scientific American. It also contains a Weekly List of Patent Claims; notices of the progress of all Mechanical and Scientific Improvements; practical directions on the construction, management and use of all kinds of MACHINERY, TOOLS, &c. &c. This work is adapted to binding and the subscriber is possessed at the end of the year of a large volume of 416 pages illustrated with upwards of 500 mechanical engravings.

TERMS: Single subscription, $2 a year in advance; $1 for six months. Those who wish to subscribe have only to enclose the amount in a letter.

A PRESENT!

To any person who will send us Three Subscribers, we will present a copy of the PATENT LAWS OF THE UNITED STATES, together with all the information relative to PATENT OFFICE BUSINESS, including full directions for taking out Patents, method of making the Specifications, Claims, Drawings, Models, buying, selling, and transferring Patent Rights, &c.

N. B.—Subscribers will bear in mind that we employ no Agents to travel on our account.

MUNN & CO.,

Publishers of the Scientific American, 128 Fulton street, New York. All Letters must be Post Paid.

Inducements for Clubbing.

5 copies for 6 months, $4 | 10 copies for 12 months, $15
5 " 12 " $8 | 20 " for 12 " $28

Southern and Western money taken at par for subscriptions. Post Office Stamps taken at their full value

© 1850 SCIENTIFIC AMERICAN, INC